

The computer as social conscience

Georgia Tech's Computing for Good project, which monitors the safety of blood supplies in African nations, is just one example of a growing interest in what's often called computing for a cause. **Page 9.**

The year in cybercrime

Malware madness and spammers in the slammer. **Page 20.**



NETWORKWORLD

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December 15, 2008 ■ Volume 25, Number 48

Stately approach

Arizona, Indiana favoring centralized approach to IT security. **Page 8.**

All-star team boosts DNS security

Seven leading domain name vendors — representing more than 112 million domain names — have formed a coalition to adopt DNS Security Extensions. **Page 10.**

Our security prognosticator

Network World columnist Andreas Antonopoulos finds that his security industry predictions for 2008 were better than a coin toss, and certainly better than his stock predictions. **Page 17.**

HP has money on its mind

Management software, licensing plans rolled out with economy in mind. **Page 18.**

Cisco plans data center product overhaul

BY JIM DUFFY

SAN JOSE — Cisco has a number of significant product introductions on tap for 2009 as the company continues to morph from a pure networking player into an overall IT supplier.

Expected next year are internally developed data center blade servers and a new release of the company's unified communications software for inter-company collaboration. The firm also committed to improving energy-efficiency across its switching portfolio.

The product launches are intended to buttress Cisco's strategy to become not just the leading network vendor to corporations and service providers but also the leading supplier of overall IT architectures to these constituencies.

"The network will enable all forms of communication and IT," said Cisco CEO John Chambers during his keynote address at the company's annual C-Scape analyst conference last week. "IT is not enabling our strategy, it is our strategy."

Perhaps the most important
See Cisco, page 36

Private clouds bring IT mgmt. challenges

BY JON BRODKIN

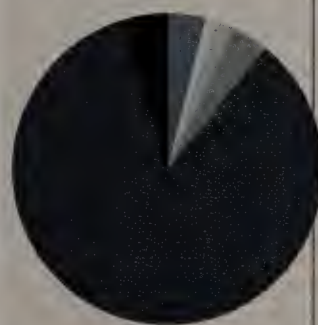
Corporate IT shops are starting to embrace the notion of building private clouds, modeling their infrastructure after such public service providers as Amazon.com and Google.

But while virtualization and other technologies exist to create computing pools that can allocate processing power, storage and applications on demand, the technology to manage those distributed resources as a whole is still in its early stages.

The corporations building their own private clouds include such notable names as Bechtel, Deutsche Bank, Morgan Stanley, Merrill Lynch and BT, according to The 451 Group. The research firm found in a survey of 1,300 corporate software buyers that about 11% of companies are deploying internal clouds or planning to do so. That

See Cloud, page 14

PLANS TO DEPLOY INTERNAL CLOUDS



451 GROUP SURVEY OF 1,300 CORPORATE SOFTWARE BUYERS

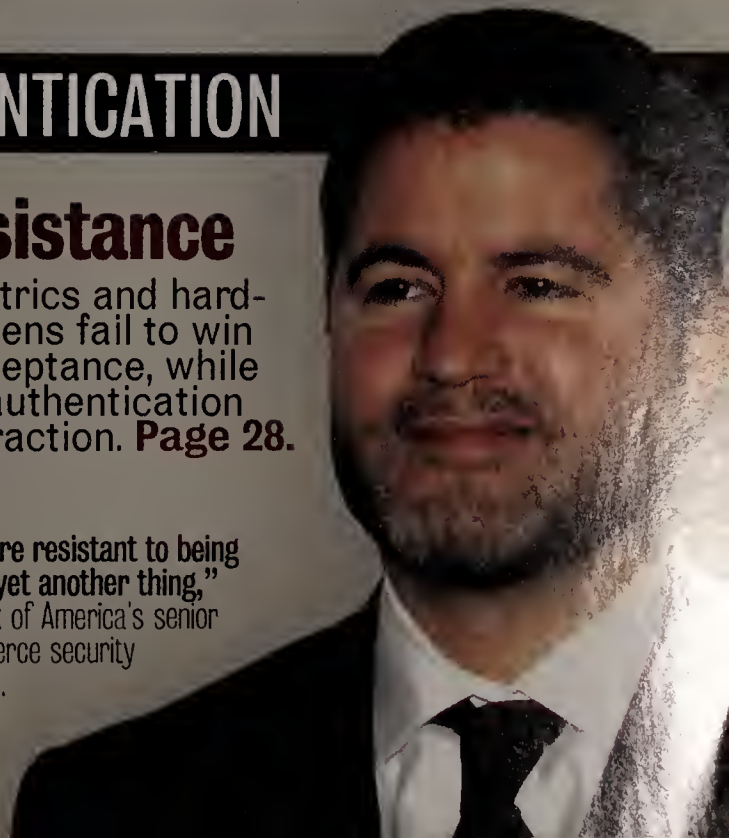
- Already deploy **4%**
- Plan to deploy in next 6 months **1%**
- Will deploy in 7 to 12 months **2%**
- Will deploy more than a year from now **4%**
- Have no plans to deploy **84%**
- No answer **5%**

guide to AUTHENTICATION

Token resistance

Complex biometrics and hardware-based tokens fail to win widespread acceptance, while less obtrusive authentication methods gain traction. **Page 28.**

"Our retail customers are resistant to being forced to keep track of yet another thing," says Jamie Ashfield, Bank of America's senior vice president of e-commerce security strategy and development.



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NETWORKWORLD

NETWORK INFRASTRUCTURE

- 8 Fighting security battles locally.
- 9 College computer course blends tech, compassion.
- 10 Domain vendors tackle DNS security.
- 17 **Opinion Andreas Antonopoulos:** How security predictions fared in a volatile year.
- 18 Sun revisits cloud computing.
- 18 HP gets cost-conscious with management software.
- 20 The year in cybercrime.
- 22 **Opinion James Kobielus:** Cloud computing in a bubble economy.
- 38 **Opinion Layer 8:** The ultimate artificial intelligence wizard?

SERVICE PROVIDERS

- 16 **Opinion Johna Till Johnson:** Internet architecture: Not logical, captain!
- 23 **Opinion Scott Bradner:** Bashing Google: for fun or for profit?
- 38 **Opinion BackSpin:** The G1 and Google's Evil Quotient.

TECH UPDATE

- 24 Document capture, routing benefits.
- 26 **Mark Gibbs:** Migrating MapPoint Pushpins.



COOL TOOLS

■ **My DVR Expander** is a 500GB external hard drive that provides additional storage to digital video recorders. See Cool Tools, page 26.

26 **Keith Shaw:** Expand your DVR; clean up your PC.

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6 Catch up on the latest online stories, blogs, newsletters and videos.

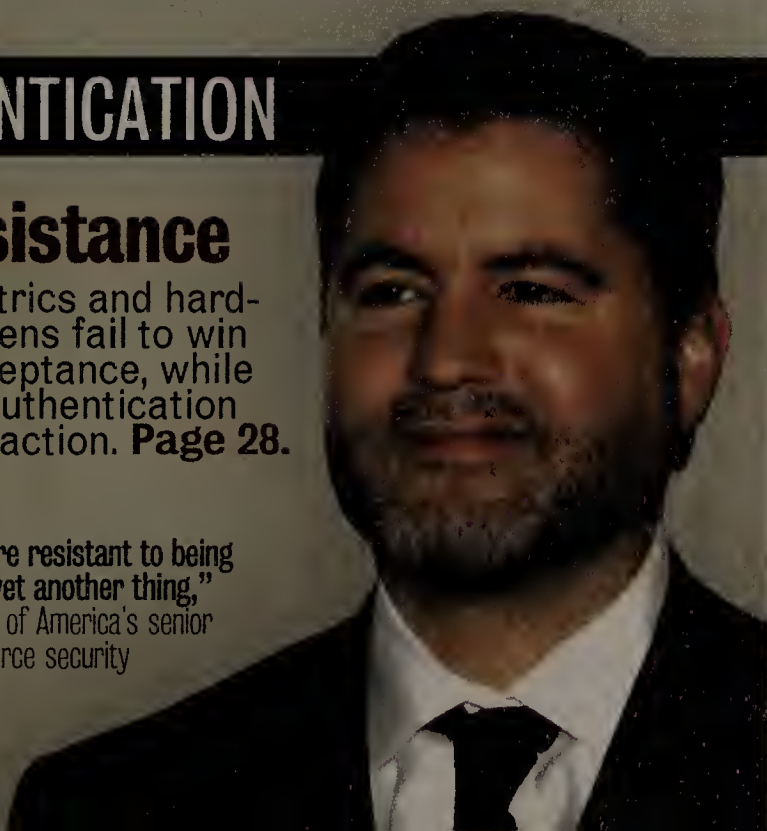
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guide to AUTHENTICATION

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GOODBADUGLY

Open Handset Alliance catching on

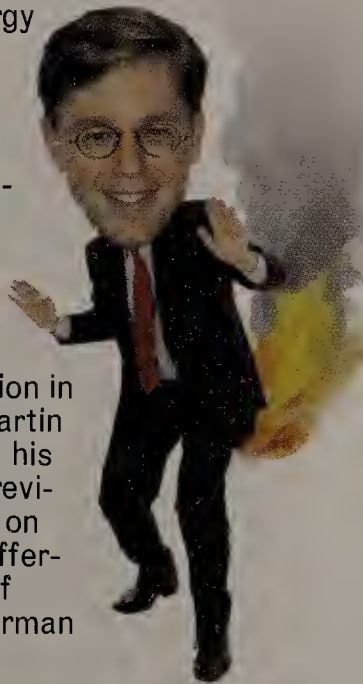
Fourteen new companies including Sony Ericsson have joined the Open Handset Alliance, the group backing Google's Android mobile operating system. The number of companies in the alliance now totals 47.

Don't mean to be critical, but . . .

Microsoft last Tuesday released its final eight patches of 2008, which address 28 vulnerabilities including a critical flaw in the new search component in Vista and Windows Server 2008. Six of the eight were listed as "critical" and the final two were rated "important." The final total of patches for the year was 77.

FCC chair in hot seat

The U.S. House Committee on Energy and Commerce issued a blistering report alleging that FCC Chairman Kevin Martin manipulated data in an effort to enable the commission to regulate cable television companies. The biggest allegation in the report is that Martin allegedly instructed his staff to rewrite a previously issued report on "à la carte" cable offerings within weeks of becoming FCC chairman in March 2005.

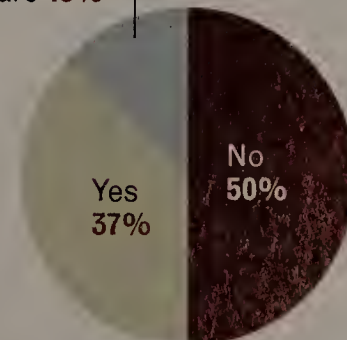


POLL

A snapshot of how networkworld.com visitors voted on a key networking issue last week:

Would you be crushed if Nortel filed for bankruptcy protection?

Don't care 13%



Total voters for this poll: 445

Vote and discuss: www.nwdocfinder.com/7957

Have regulations really increased security?

Re: Financial crisis and transparency good for network security (www.nwdocfinder.com/7925):

Aside from the political point that the financial markets were already very heavily regulated — so I don't see how one can claim the recent fiasco is due to lack of regulation — here's what jumps out at me here.

Where are the data for this claim that regulatory compliance has increased security? I don't think there are any. What are the numbers on compromises and breaches before and after [the Sarbanes-Oxley Act], etc.? More intrusion-prevention systems deployed, more log aggregation doesn't mean anything without a success metric to which to refer. Do programs like this have any effect other than satisfy auditors? Or, how many organizations have suffered a loss due to noncompliance? Meaning HIPAA fines or [Payment Card Industry] or SOX penalties.

I work in a healthcare organization, and I can say that for the most part, HIPAA has zero effect. There are no teeth in it so it isn't a consideration. The only people who mention it are vendors trying to sell compliance-related products.

Jeff Martin

Discuss at www.nwdocfinder.com/7925

IPv6 as national-security issue

Re: Survey: U.S. foot-dragging on IPv6 setting country back (www.nwdocfinder.com/7926):

IPv6 is as strategic to the well-being of the United States as the financial market bailout. The U.S. military has already realized this at a high level by requiring agencies to at least have tested IPv6.

This body of knowledge will spill into the commercial markets, eventually creating a pool of knowledgeable experts. Unfortunately this is not enough to handle this type of technology advancement. This is the strategy employed during the Internet boom, and

unfortunately this is too slow a method.

Well, assume this: China, Europe and the rest of the world gain a strong understanding of IPv6 technologies; those technologies then are transferred into information-assurance knowledge, which directly affects the abilities of the United States to respond to cyberattacks.

According to many, the United States is in a default state of economic or cyberwar with China. To win that war, the United States must have superior knowledge.

Yes, I am biased: I work for one of the players in IPv6. But in this view and as a patriot, I see only one solution: Deploy IPv6 before we lose both our money and our knowledge! Let's hope that the next administration will take the good advice from the previous administration and continue IPv6 deployment and research.

Matthew F Caldwell

Discuss at www.nwdocfinder.com/7927

iEnterprise

Re: Smartphone showdown: iPhone vs. BlackBerry Storm (www.nwdocfinder.com/7928):

The iPhone is the device best adapted to the changing state of the enterprise — more people are working at or from home, and mixing work with personal matters.

The concept of lifestyle — whether it concerns work, entertainment, privacy or research — is changing with the advent of increased mobile communications. The BlackBerry is still hooked into traditional paradigms — the lack of Wi-Fi is a classic gotcha, forcing people down old-style, carrier-dictated and expensive modes of communication. BlackBerry will have Wi-Fi within one year, but it will be too late.

Just as the Internet broke open the monopolies in the distribution of news and information, so shall the iPhone and similar devices break open the barriers to communicating that information. Watch it happen.

Dave Noble

Discuss at www.nwdocfinder.com/7928

How Vista uses more energy

Re: Microsoft: Vista saves world one car at a time (www.nwdocfinder.com/7929):

Vista requires more memory than XP. More memory in my notebook computer requires more power, so my battery wouldn't last as long. Ungreen. I could compensate with a bigger battery, but then I'd need to eat more Subway BLTs to have the energy to haul around a heavier computer. More ungreen.

John Gorentz

Discuss at www.nwdocfinder.com/7929

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 492 Old Connecticut Path, Framingham, MA 01701-9002. Please include phone number and address for verification

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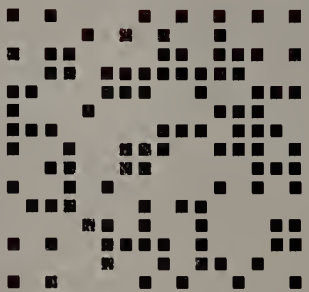
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BLOGOSPHERE

■ **Sony hit with \$1 million penalty over underage online privacy violations.** The Layer 8 blog reports: "It really isn't a big enough penalty and the company admitted no guilt but Sony BMG Music Entertainment agreed to pay \$1 million as part of a settlement to resolve Federal Trade Commission charges that it knowingly violated the privacy rights of over 30,000 underage children. Specifically the FTC said the company violated the agency's Children's Online Privacy Protection Act and the FTC did say the penalty was its largest ever in a COPPA case." www.nwdocfinder.com/7933

■ **5G wireless: don't get your hopes up.** Craig Mathias writes in his Nearpoints blog: "I'm giving a talk for the Boston Chapter of the IEEE Communications Society on the subject of 4G and Beyond. My intent here is an analyst's-eye-view of 3G, why we need to move to 4G (or do we?), and what 5G might look like — if it materializes at all. In doing the research for this talk, I came to a number of interesting conclusions, not the least of which is that 5G might not be necessary or even possible."

www.nwdocfinder.com/7934

■ **Invention uses wireless to jam teen drivers' cell phones.** The Alpha Doggs blog reports: "University of Utah researchers have invented technology that could come to be embraced by teenagers with the same enthusiasm they have for curfews and ID checks. And like those things, it could save their lives. Key2SafeDriving technology uses RFID or Bluetooth wireless capabilities to issue signals from car keys to cell phones to prevent drivers from talking on their phones or texting while driving. Some research shows that as many as 1 in 10 teen drivers are talking on cell phones or texting while driving at any time, and the possible consequences of such ill-advised multitasking have grabbed many a headline in recent years."

www.nwdocfinder.com/7935

■ **Why are entrepreneurs joining Microsoft?** Mitchell Ashley writes in his Converging on Microsoft blog: "Microsoft is far from perfect but I like a lot of what I'm seeing from them these days. Ozzie's attracting some very good talent from outside the company, most notably talent like Identity 2.0 dude Dick Hardt who just announced on his blog he's leaving for Redmond. Identity management seems to be one area Microsoft's not been afraid to let others innovate outside the company and work hard on bringing in the talent."

www.nwdocfinder.com/7936

INTERVIEWS, THE COOLEST TOOLS AND MORE

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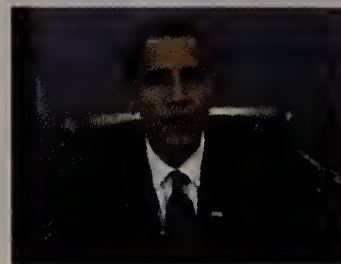


Supercomputer is super-fast

We take a look inside Tsubame, Japan's second fastest supercomputer.

www.nwdocfinder.com/7939

IDG NEWS WIRE:



Obama: No child left offline

U.S. President-elect Barack Obama has outlined a plan to give every child in the United States.

www.nwdocfinder.com/7940

GADGETS:



The Medical Phone?

A U.K.-based mobile phone maker plans to start selling in 2009 a novel smartphone originally built for the British military.

www.nwdocfinder.com/7941

BEST OF NWW'S NEWSLETTERS

Is wireless changing our DNA?

Wireless: A number of readers have written during the past several months to voice concerns about the effect of wireless signals on human health. This topic continues to grow hotter as high-power 802.11n networks emerge and industry suppliers push the concept of the "all-wireless enterprise" — a phrase that conjures up visions of our bodies getting zapped with wireless signals all day long. Many of us in the U.S. look to the Federal Communications Commission for guidelines about such topics, including what is a safe density of access points (APs) to deploy and the amount of RF tolerance a person can tolerate safely. However, the FCC doesn't really take a strong stand on this issue. The FCC does consider and test the wireless radios within portable devices, such as tablets, single-mode and dual-mode phones, which are used in very close contact with the human body. The commission as yet has no such detailed tests for APs and Wi-Fi-enabled laptops, because it considers the distances between the equipment and an end user to be comparatively high.

www.nwdocfinder.com/7930

Tech exec: In a campus computer science lab, students are doing research and development on advanced cybersecurity technologies. Professors and technical advisors are helping to commercialize the results of the R&D, intent on creating viable digital security products. Experienced business leaders are

nurturing the budding companies that will bring the new solutions to market. Venture capitalists and angel investors are sniffing around for their next big opportunity. And the state government and the U.S. Department of Defense are solidly behind the efforts to make this new incubator, and the Institute for Cyber Security (ICS) as a whole, successful. If this sounds like your typical Silicon Valley university research center and technology incubator, think again. This isn't Stanford University, or University of California at Santa Cruz, or any of the other schools in the shadows of the tech giants. In fact, this brand new cyber security center isn't in Silicon Valley at all. Instead, it's deep in the heart of ... Texas.

www.nwdocfinder.com/7931

Branch office: One of the most common practical implications of a downward spiraling economy is the "travel freeze." Those growing weary of hopping on planes, eating room service, and living out of a suitcase may welcome the change. But it doesn't take long for reality to set in: The lack of in-person visits — particularly for virtual workers — can affect productivity, sales success, and customer satisfaction. In the past, companies turned to videoconferencing. We will see a surge in videoconferencing. But we also will see a surge in social networking — with sites such as Facebook, Myspace, Flickr, Twitter, LinkedIn, and YouTube keeping people connected.

www.nwdocfinder.com/7932

Nortel mulls bankruptcy

Nortel has hired lawyers to consider whether it should seek bankruptcy protection, but the company says it has made no decision to do so. It will instead follow the restructuring and cost-cutting plan devised last month, which includes plans for selling its metro Ethernet unit and getting rid of facilities. "On Nov. 10, we put in place an aggressive plan to bring down costs by \$400 million with a minimum level of cash outlay. The goals we laid out on Nov. 10 have not changed," the company said last week in response to a *Wall Street Journal* story that the company was seeking legal advice to explore bankruptcy. In that story, a Nortel spokesman is quoted as saying no bankruptcy filing is imminent. Nortel's statement to *Network World* does not deny that it sought advice on bankruptcy. The company says, "Nortel is a viable partner for the long term. We have no debt maturity until 2011, and we are preserving and strengthening our case position." www.nwdocfinder.com/7942

Microsoft: IE7 browser vulnerability also affects IE5, IE6. An unpatched vulnerability found in Internet Explorer 7 also affects older versions of the browser, as well as the latest beta version, Microsoft warned. The new information widens the pool of users who could be at risk of inadvertently becoming infected with malicious software installed on their PC, because Microsoft does not have a patch ready yet. In an advisory updated last Thursday, Microsoft confirmed that IE 5.01 with Service Pack 4, IE6 with and without SP1, and IE8 Beta 2 on all versions of the Windows operating system are potentially vulnerable. Also vulnerable are users running IE7 on Windows XP SP2 and SP3, Windows Server 2003 SP1 and SP2, Windows Vista with and without SP1, and Windows Server 2008. Microsoft said it has seen only limited attacks targeting the flaw in IE7. However, security analysts have said it appears an increasing number of Web sites are being built that can exploit the vulnerability. The problem is particularly severe because in some cases users merely have to view a Web site for a Trojan horse program to be downloaded automatically to their machine.

www.nwdocfinder.com/7943

\$41 billion deal to buy Bell Canada collapses. A \$41 billion deal to buy Bell Canada — what was once billed as the largest leveraged buyout ever — collapsed last week after failing a solvency test. The companies involved in buying Bell Canada, including the Ontario Teacher's Pension Plan and Merrill Lynch Global Private Equity, issued a joint statement terminating the deal after receiving the solvency opinion from KPMG, which was enlisted as part of the agreement to evaluate the transaction. KPMG ruled that if the deal were to go through, it would result in an insolvent entity, or one unable to pay off its debts. The purchasers said they will not have to pay a \$1.2 billion termination fee

because of the circumstances of the cancellation, nor do they expect to be paid a similar fee by Bell Canada.

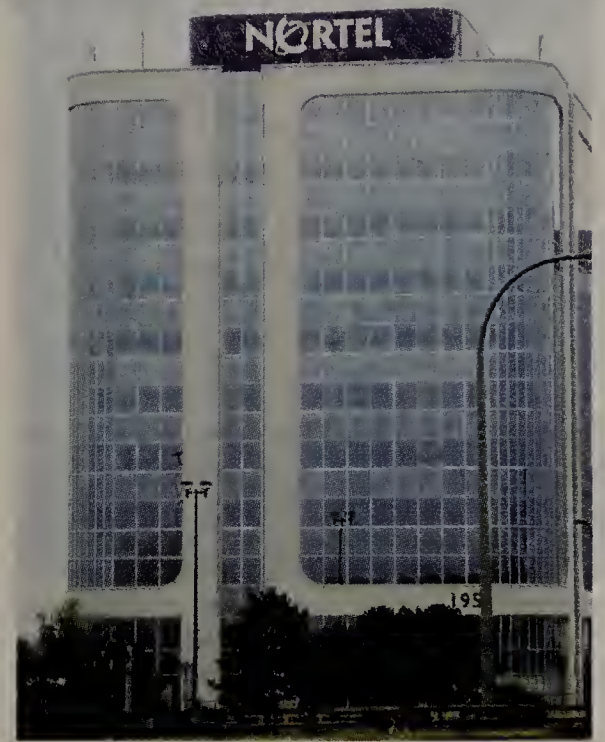
www.nwdocfinder.com/7944

Gartner lowers worldwide software spending forecast. Gartner has lowered its worldwide enterprise software spending forecast, citing "a combination of economic, technical and regional forces." The analyst firm said 2008 spending will total \$229.2 billion, instead of the \$231.2 billion it predicted in September. For the upcoming year, software spending will jump by 6.6% to \$244.3 billion, down from Gartner's previous forecast of 9.5% growth. Some technologies will fare better than others, Gartner said. For example, the dismal economy will cause companies to delay or even cancel service-oriented architecture projects for now, and those plans will be slow to resurface. But software aimed at optimizing how organizations are run, such as business process management and master data management, will fare better. Enterprises seeking to cut costs also will be drawn to open source software, virtualization technologies, unified messaging and collaboration technologies, Gartner said.

www.nwdocfinder.com/7945

Mozilla security chief calls it quits. Window Snyder, the head of security at Mozilla, will resign her position at the end of the year, she wrote in a blog post last week. Snyder, who has the kooky job title of "chief security something-or-other," is in charge of improving security in the Firefox Web browser and other Mozilla projects. She isn't yet saying publicly what she plans to do next. A source familiar with her plans said she is going to work at a start-up company. Snyder joined Mozilla in September 2006 from Microsoft, where she was a security strategist and worked on Microsoft's security-focused Windows XP Service Pack 2 update.

www.nwdocfinder.com/7946



Broadcom combines 802.11n Wi-Fi, Bluetooth, FM radio on one chip.

Broadcom unveiled a chip that packages 802.11n, enhanced data rate Bluetooth and FM radio for mobile phones. The new BCM4329 is the first Broadcom product to support high-throughput 802.11n Wi-Fi on handsets. The 65-nanometer chip supports 802.11n in both the 2.4GHz and 5GHz bands, and can run on both simultaneously. The chip's Wi-Fi performance maxes out at 50Mbps of wireless throughput, according to the vendor. That's still nearly twice the throughput of 802.11a or 802.11g Wi-Fi. It supports Bluetooth data rates of 1M, 2M and 3Mbps, and uses Broadcom algorithms to allow Bluetooth and Wi-Fi to operate at the same time in the 2.4GHz band. The chip supports FM transmission, enabling the chip to stream music between devices; and FM reception, enabling a handset to work as a standard FM radio.

www.nwdocfinder.com/7947

Embotics grabs \$4 million in VC cash.

Virtualization management software maker Embotix garnered \$4 million in a Series B round of financing led by Canada's Covington Capital. Embotix, also a Canadian company, intends to put the additional cash toward building its server virtualization management technology and expanding global sales and operations. Embotix' flagship V-Commander software, which became available in December 2007, provides centralized policy-based management for virtual machines. The software can track each virtual machine throughout its life cycle, and associates specific policies around access, authorization and end of life with each virtual machine.

www.nwdocfinder.com/7948

Fighting security battles locally

BY ELLEN MESSMER

A look at security projects in such places such as Arizona, Indiana and Florida reveals that state and local governments are worrying as much as any business enterprise about protecting the sensitive data they hold.

Arizona's government last year decided to create state-level positions for both CISO and chief privacy officer (CPO), after the Federal Trade Commission ranked Arizona first among states in identity theft (though the exact reason wasn't cited). After the state passed legislation for more oversight, David VanderNaalt, named CISO, began working with Mary Beth Joubanc, the state's CPO, in the newly created Statewide Information Security & Privacy Office at the Statewide Information Technology Agency.

"This is an oversight agency," says VanderNaalt, formerly CISO for the city of New York for eight years.

VanderNaalt and Joubanc report directly to Arizona's governor and others about whether dozens of state agencies are complying with state legislation requiring agencies to report security incidents.

"In my role I see we have 100 different business models," VanderNaalt says about Arizona's dozens of agencies and their departmental activities. Many agencies collect data about security incidents, but there has to be a centralized way to automate collection from technical sources in addition to manual reports, he says.

Just last month, for example, to comply with state law, Arizona's Department of Economic Security had to notify the families of about 40,000 children that their personal data may have been compromised following the theft of hard drives from a storage facility.

VanderNaalt says one approach he's testing at the agencies is a tool from Agilience called RiskVision that reports and tracks incidents statewide, though he adds when it comes to identity theft, the private sector is likely to be at least as big a source of the problem.

The purpose of the security and privacy office is to tackle wider concerns as well, including major online attacks, to respond with as complete a picture as Arizona's government can muster.

To do that, VanderNaalt knows he needs the trust from Arizona's employees. "We're trying to position ourselves that reporting is a good thing, and you will get help," he says. The oversight agency also will be assessing agency practices and technologies with an eye to identifying statewide approaches to safeguarding data security and privacy.

Securing Indiana

Indiana already has adopted a centralized approach to IT and security and it appears to



"We're trying to position ourselves that [security incident] reporting is a good thing, and you will get help."

David VanderNaalt
CISO, state of Arizona

be working well, according to Paul Baltzell, director of distributed services. His department is responsible for desktops used across state agencies.

Four years ago, Gov. Mitch Daniels, annoyed that even the state's e-mail systems weren't fully connected (although its state WAN was), decided there should be a state-level CIO office defining infrastructure requirements, including security policies.

Indiana's IT centralization effort has had some pushback, Baltzell acknowledges, noting that it resulted in about a 40% staff reduction in some IT functional areas. By centralizing, however, the state government now benefits from volume discounts for IT acquisitions, including security procurements, he says.

As part of a recent state-level acquisition of McAfee antivirus, intrusion-prevention and other security gear, Indiana licensed McAfee's Endpoint Encryption software, which it's deploying on about 10,000 laptops and other mobile devices.

"One bad security breach and you've lost all credibility," Baltzell says, adding that trying to achieve this wide a rollout of desktop encryption would have been much more difficult without a centralized statewide mandate.

Baltzell also is enjoying success with Intel's vPro, now used in 6,000 of Indiana's state-agency desktops for remote management of them "even if it's blue-screened," he says.

"We have offices all over the state, and my techs have to get in the car if they can't fix something remotely," Baltzell says. VPro has greatly simplified remote management, and Baltzell hopes security vendors will work with Intel to explore some of the potential it offers in malware defense.

Security at the local level

City governments also take on ambitious security projects, and find it can take a substantial effort to put centrally mandated IT governance policies in place just for city agencies.

"A key one we had is software installation and a computer-use policy spelling out the rules of engagement," says Nelson Martinez, systems support manager for the Florida's city of Miami Beach, which has about 2,000 employees using computers.

Establishing a citywide computer-use policy entailed individual meetings with city agencies and five unions including the police and fire unions and their lawyers to discuss the policy and how violations would be handled.

"It all went faster than I thought it would," says Martinez, noting each group voiced issues about how reprimands or punishments might be applied. In the end, it was made clear that the IT department might provide information about blatant violations of IT policy — for instance, "no chat, no instant messaging, no adding in unofficial software except with permission" — but it's up to high-level city management to handle the repercussions, he says.

For endpoint enforcement on employee computers, the city is using eEye Digital's Blink, which prevents malware from executing and blocks unauthorized applications. "I'm trying to keep them out of trouble," Martinez says. "People are always trying to test the boundaries."

One of the most ambitious projects the city is undertaking now is single-sign-on (SSO) authentication using fingerprint biometrics for authentication to attain a higher security level than simple passwords can, Martinez says. ■

InBrief

RIM moves to acquire two companies

Research In Motion hopes to add a content delivery platform to its offerings with a planned \$18 million acquisition of Chalk Media, announced last week. Chalk's Mobile chalkboard allows users, such as an enterprise, to push content including text, graphics, video and audio out to BlackBerry users. Chalkboard lets administrators track use of the content, which can be encrypted and prevented from being forwarded or copied. News of the Chalk acquisition came one day after RIM announced it has made a hostile takeover bid for security vendor Certicom. If RIM is successful, Certicom's Elliptic Curve Cryptography technology would help RIM target companies and government agencies with very high security requirements.

College computer course blends tech, compassion

BY JOHN COX

It wasn't your typical computer science problem that caught the attention of two Ph.D. candidates at Georgia Tech's College of Computing. It was more of a life-or-death problem: monitoring the safety of blood supplies in African nations ravaged by HIV and AIDS.

And the fact that it caught anyone's attention is due in large part to the college's recently launched Computing for Good project, known as C4G. It's a course that encourages Georgia Tech students and faculty to look at how computer technology can be applied to improve — and even save — lives.

The C4G course was sparked by a faculty presentation in the fall of 2007 by its lead advocate, Santosh Vempala, distinguished professor of computing at the college's School of Computer Science. In spring 2008, 17 Georgia Tech students signed up for the first C4G course, breaking up into teams to work on seven projects as close as the school's home in downtown Atlanta and as

far away as Africa. It was taught by Vempala, assistant professor Michael Best, of the School of International Affairs, School of Computer Science Chair and Professor Ellen Zegura.

The Georgia Tech course is just one example of a growing interest in what's often called computing for a cause or socially relevant computing. As one paper, by researchers from State University of New York in Buffalo, Rice University and Microsoft Research, put it: "It presents computer science as a cutting-edge technological discipline that empowers [students] to solve problems of personal interest...as well as problems that are important to society at large...."

Keeping blood safe

The Web tool for blood safety monitoring is one of the latter. In a few weeks, it will go live in 14 African countries. The idea was to create an easy-to-use Web application that could be used by public health staff in Africa to monitor the safety of national blood supplies. The problem is especially critical in nations where HIV and AIDS infections are epidemic.

The need for such an application came to Vempala's attention last year, when he talked with John Pitman, a public health adviser with the Global AIDS Program at the Centers for Disease Control and Prevention (CDC) in Atlanta, who had created an Excel-based spreadsheet that public health staff could use to report quarterly on about 80 data points that were indicators of blood safety.

But there were obvious problems. Staff needed to know Excel and have it loaded on a local computer. With separate applications running on PCs, aggregating and sifting data from different locations was awkward, inconsistent and time-consuming. As a result, getting local staff to use the spreadsheet consistently, or even at all, was a struggle. Pitman and Vempala thought a Web-based application could change all this.

The problem and the project appealed to two Ph.D. candidates in the C4G course, Adebola ("Bola") Osuntogun, originally from Nigeria, and Stephen Thomas, both of whom had heard Pitman's presentation. Putting their skills to practical work and seeing lasting results that would benefit someone other than researchers was a big part of the attraction. "It seemed a way to do something that was not purely academic," Thomas says. "We'd be improving the quality of life."

Vempala was the third member of the team, acting as faculty adviser. Osuntogun and Thomas quickly sketched out a design, based on the data in Pitman's original Excel spreadsheet, for a Web-hosted application, accessed via a browser over low-bandwidth connections. Initially, they assumed local computing resources would be minimal. The back-end application was based

See C4G, page 22

Solving the world's problems

Georgia Tech's inaugural Computing for Good (C4G) course in spring 2008 tackled a wide range of student projects besides the blood monitoring Web application, including:

- Creating a Web portal and learning application for 15 idle laptops in a summer and after-school program for children, parents and teachers in one of Atlanta's lower-income neighborhoods.
- Replacing a paper/pencil/cell phone "system" used by United Way staffers to allocate beds for the homeless at shelters in Atlanta with a computerized, easily searchable database. Staffers can sift quickly through the inventory of available beds, based on a range of specific criteria for each individual: gender, family situation and health status, for example.
- Laying the groundwork for a system based on mobile phones that lets veterinarians in Uganda and Ghana report cases of bird flu to animal health officials.

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Domain vendors tackle DNS security

BY CAROLYN DUFFY MARSAN

Momentum continues to build for rapid deployment of DNS encryption mechanisms.

Seven leading domain name vendors — representing 112.5 million domain names or 65% of all registered domain names — last week formed an industry coalition to work together to adopt DNS Security Extensions, known as DNSSEC. Among the members of the DNSSEC Industry Coalition are VeriSign, which operates the .com and .net registries; NeuStar, which operates the .biz and .us registries; info registry operator Afilias; .edu registry operator Educause; and The Public Interest Registry (PIR), which operates the .org registry (see graphic).

DNSSEC prevents hackers from hijacking Web traffic and redirecting it to bogus sites. The Internet standard prevents spoofing attacks by allowing Web sites to verify their domain names and corresponding IP addresses using digital signatures and public-key encryption.

The coalition is “a really good and public statement by all of the members that we believe that DNSSEC is vital to securing the stability and trust of the Internet, and we will do everything we can as members to get the technology in place and get our zones signed,” says Rodney Joffe, senior vice president and senior technologist for NeuStar.

DNSSEC is viewed as the best way to bolster the DNS against such vulnerabilities as the Kaminsky bug discovered this summer. It's because of threats such as these that the U.S. government is rolling out DNSSEC across its .gov and .mil domains.

The DNSSEC coalition announced its formation weeks after the U.S. federal government closed a formal comment period for the domain name industry to provide suggestions on deploying DNSSEC across the DNS root zone, which operates at the highest level of the DNS hierarchy. DNS root servers make it possible for top-level domains, including .com, .net and .org, to match domain names with corresponding IP addresses and Web sites. Without the DNS root being cryptographically signed via DNSSEC, the Internet's top-level domains aren't safe from attack even if they deploy DNSSEC.

The domain name industry is being driven to adopt DNSSEC because of worries about the Kaminsky bug, a serious DNS security flaw in that was discovered in July by researcher Dan Kaminsky. The bug allows for cache poisoning attacks, where a hacker redirects traffic from a legitimate Web site to a fake one without the user knowing.

“The Kaminsky bug changed the debate about DNSSEC,” says Alexa Raad, CEO of PIR, which supports 7 million domain names. “Until then it was a question of is DNSSEC necessary. Then it became how do we do DNSSEC.”

The PIR announced plans to deploy DNSSEC

Securing DNS

Seven leading domain name vendors, representing 65% of the industry, have formed an industry coalition to work together to adopt DNS Security Extensions, known as DNSSEC.

Vendor	TLD	Names registered
VeriSign	.com, .net	89.4M
The Public Interest Registry	.org	7M
Nominet UK	.uk	7M
Afilias	.info	5M
NeuStar	.biz	2M
	.us	1.4M
Foundation for Internet Infrastructure	.se	650K
Educause	.edu	7K

in June, before the discovery of the Kaminsky bug. Since then, the nonprofit has been trying to educate its 600 channel partners around the world about the need for DNSSEC. It has signed up five registrars for a DNSSEC test that will take place in early 2009.

The registry initiated the DNSSEC coalition because it wants to share its experiences with DNSSEC deployment and simplify the upgrade process for registrars.

“It's not just important that .org implement DNSSEC, but DNSSEC needs to be seen as an infrastructure upgrade to the entire DNS because of all the applications that ride on DNS today and all the applications that will ride on DNS in the future,” Raad says. “This cannot be done by one organization alone.”

NeuStar says it has enabled its registry platform to support DNSSEC. NeuStar provides the underlying DNS resolution services for 2 million .biz domain names and 1.4 million .us domain names. Now NeuStar is encouraging DNSSEC deployment among such companies as GoDaddy, eNom and Network Solutions, which sell domain names to businesses and individuals.

“We're doing everything we can to work with our customers to go through the process of supporting DNSSEC,” Joffe says. “They may or may not understand the urgency. From our point of view, this is not something that is going to be delayed. It is the single most important

thing that needs to be done to try and maintain public trust in the Internet.”

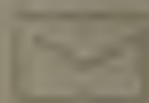
The DNSSEC coalition hopes to drive adoption of DNSSEC across registries and registrars worldwide. The group includes two country-code top-level domains — .se for Sweden and .uk for the United Kingdom — along with Internet security companies such as Shinkuro, NLNet Labs and Secure64 Software. The group's members say DNSSEC is the best known mechanism for thwarting a variety of attacks including cache poisoning, DNS redirection and pharming that are used to commit fraud and personal identity theft.

The DNSSEC coalition is creating implementation manuals and educational materials to make it easier and less costly for the domain name industry to adopt DNSSEC.

“My hope for the DNSSEC Industry Coalition as its chair is to help encourage collaborative efforts to make for a safer and more secure DNS,” says Lauren Price, PIR's senior marketing manager. “We're trying to find ways to streamline the implementation of DNSSEC across all of the DNS registries. ... We're trying to take the burden off the registrars.”

The main goal of the DNSSEC coalition is to speed up deployment of this security standard, but leaders admit that they can't fix DNS security until the U.S. government signs the DNS root. “The domino that starts everything is the root being signed,” Raad says. “Even with a very well-intentioned industry coalition, it is unrealistic for us to set a particular date for DNSSEC deployment without the root being signed. ... That's why we're urging the signing of the root using the best technical solution that is the most expedient.”

Afilias, which is a registry service provider to more than 15 top-level domains in addition to .info, said it is managing the technical implementation of DNSSEC for .org. In a statement, Afilias said it “views the implementation of DNSSEC as critical to advancing the security of the Internet. As PIR's technical provider, we are working closely with them on providing the technical infrastructure to support the signing of the .org zone. We are also investigating DNSSEC deployments for our other [generic top-level domain] and [country-code top-level domain] customers who have expressed interest. We fully support the DNSSEC coalition and hope its activities will encourage the adoption of DNSSEC throughout the rest of the chain of trust.” ■



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Network World launches new online resources

"IT Product Guides" streamline the buying process, while "Toolshed" focuses on IT tools, the latest gadgets and experts addressing tech questions

Network World this week pulled the wraps off two new Web site resources that are designed to simplify your life, keep you in the know and help you solve problems.

IT Product Guides

Our new IT Product Guides are threaded throughout the site and combine *Network World* articles and product tests with detailed vendor information about products and where they fit in. The guides cover 60 key network product areas, from routers to collaboration software to IP PBXs.

A **Quick Glance** feature shows all the participating vendors in a given product category, the market they are targeting (small to large) and how the products compare on price. Clicking on any entry in the Quick Glance grid brings up a brief product description and a link to in-depth product specifications that *Network World* has obtained from the vendors.

The **Compare Tool** feature lets buyers select the most interesting products to line up side-by-side, revealing detailed technical specifications and pricing, while the **Buying Info** tab showcases original *Network World* articles about the product category. These articles address everything from market trends to best practices, buying tips, technical primers and case studies.

Together these components, along with a news feed of the latest developments in each category, are designed to help enterprise IT buyers make informed buying decisions.

Tool Shed

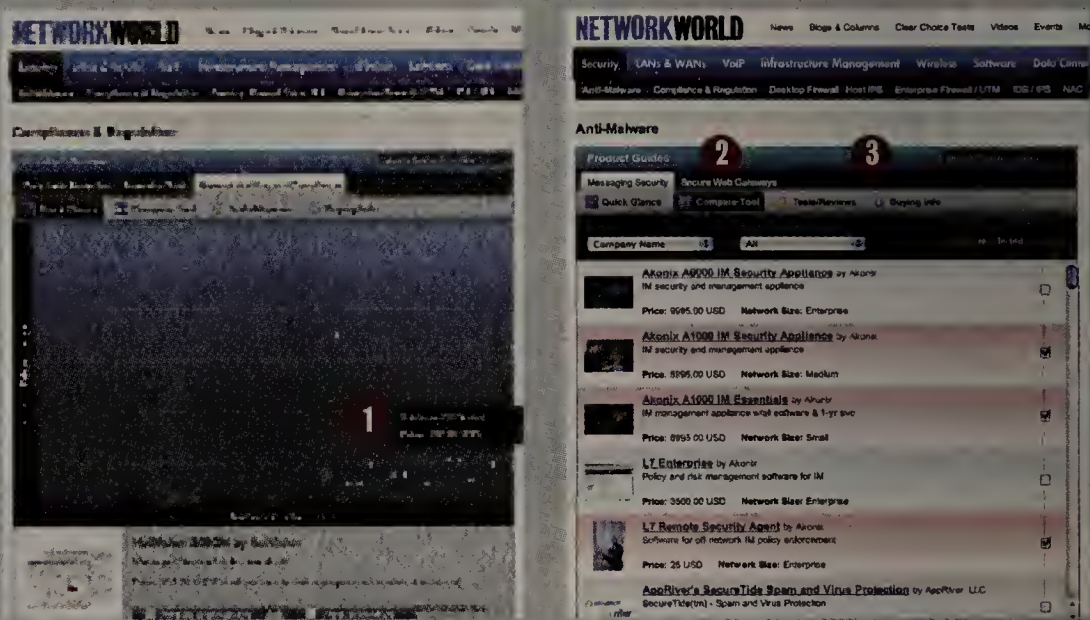
We are also proud to unveil Toolshed, a site resource that brings together:

- Reviews of **IT tools** by longtime contributor Mark Gibbs.
- Hands-on reports about the latest **gadgets** by *Network World's* Keith Shaw.
- Expert **advice** from contributors Steve Blass and Ron Nutter in what we call IT Asked & Answered. Blass, who has been working with TCP/IP networks, systems and software for almost 20 years, is an IT manager and Internet consultant in Phoenix, Ariz. Nutter, who has been in the field since the 1980's, is a network engineer on a team supporting a national network connecting over 45 offices across the county.

Throughout Toolshed the community is encouraged to rate the tools, gadgets and advice so you don't have to take our word about the importance of this stuff. The community also is encouraged to weigh in with their own thoughts about the material discussed and ultimately will be able post their own reviews.

Poke around in these two new areas and let us know what you think.

— John Dix (jdix@nww.com)



The new IT Product Guides cover 60 areas and offer a Quick Glance feature that shows target products on a grid (above left) with price on the Y axis and network size on the X. Clicking on any dot on the grid (1) gives summary product details and the option to access more detailed specifications or a brochure. If you want to dive deeper, you can use the Compare Tool feature (2) to analyze products side-by-side, peruse *Network World* product tests, or find articles about buying tips and market trends (3).



In Toolshed we pull together three things everyone cares about: IT tools (4), the latest high tech gadgets (5) and advice/discussion about vexing tech problems (6). All three Toolshed resources invite the community (7) to rate the items being discussed, and weigh in with their own thoughts.

The Real Stuff.

Financial services firms like ours are very dependent on the use of email and Web connectivity to conduct our business. As the Director of information technology I have to make the security of those channels my top priority.

And as the use of the domain name system to conduct attacks, steal data and interrupt business has increased, so has our need to monitor our communication channels. In this new environment, using standard command line tools to detect and fix critical problems, particularly in a crisis, is no longer an option. It's time consuming and costly. And frankly, that's time I don't have and a cost my firm can't afford. Like any smart IT guy I look for the most efficient solution to solve a problem. That's why I absolutely depend on DNSstuff to stay on top of my domain management responsibilities and fix a DNS problem fast in a crisis. DNSstuff is rock solid and reliable; an every day tool that I can't afford to be without. I can make DNS changes quickly, manage my domains with ease, and run a report in seconds. And DNSstuff's 24 hour alert service helps me detect critical changes before my users do.

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Cloud

continued from page 1

may not seem like a huge proportion, but it's a sign that private clouds are moving beyond the hype cycle and into reality.

"It's definitely not hype," says Vivek Kundra, CTO for the District of Columbia, which plans to blend IT services provided from its own data center with such external cloud platforms as Google Apps. "Any technology leader who thinks it's hype is coming at it from the same place where technology leaders said the Internet is hype."

At the center of cloud computing is a service-oriented interface between a provider and user, enabled by virtualization, says Thomas Bittman, a Gartner analyst. "When I move away from physical to virtual machines for every requirement, I'm drawing a layer of abstraction," he says. "What virtualization is doing is you [the customers] don't tell us what server to get, you just tell us what service you need."

Virtualization technologies for servers, desktops and storage are readily available, but to get all the benefits of cloud computing, enterprises will need a new, meta operating system that controls and allocates all of an enterprise's distributed computing resources, Gartner says.

It's not clear exactly how fast this technology will advance. VMware plans to release what might be considered a meta operating system with its forthcoming Virtual Data-center Operating System; in terms of timing, however, the vendor will say only that it will be released in 2009.

Cloud computing is less a new technology than it is a way of using technology to achieve economies of scale and offer self-service resources that are available on demand, The 451 Group says. Numerous enterprises are taking on this challenge of building more flexible, service-oriented networks using existing products and methodologies.

Thin clients and virtualization are the key for Lenny Goodman, director of the desktop management group at Baptist Memorial Health Care in Memphis, Tenn. The hospital uses 1,200 Wyse Technology thin clients, largely at patients' bedsides, and delivers applications to them using Citrix XenApp application virtualization tools. It also is rolling out virtual, customizable desktops to those thin clients using Citrix XenDesktop.

Just as Internet users can access Amazon, Google, Barnes & Noble or any Web site they wish to use from anywhere, Goodman wants

Cloud computing at a glance

What a private cloud is: A flexible computing network modeled after the cloud computing services of such public providers as Google and Amazon.com, yet built and managed internally for a business's users.

How it works: Virtualization and other technologies combine to create flexible and scalable computing pools that allocate processing power and applications on demand. Users are presented only with a service-oriented interface.

Components of a private cloud: Virtualization, application streaming, configuration management, application life-cycle management, runbook/process automation, usage-based chargeback and billing, operating-system provisioning.

Key benefits: Economies of scale, service-level agreements, availability on-demand, linear scalability, self-service.

Key challenges: Vendor hype, growing storage needs, technology that can manage distributed resources as a whole still in early stages.

Who's doing it: Bechtel, Deutsche Bank, Micron Technology, T-Systems, Merrill Lynch, A.G. Edwards, other large corporations.

hospital workers to be able to move among different devices and have the same experience.

"You get the advantage of taking that entire experience and making it roam without the nurse having to carry or push anything," he says. "They can move from device to device."

A cloud-based model where applications and desktops are delivered from a central data center will make data more secure, because it's not being stored on individual client devices, Goodman says. "If we relocate that data to the data center by virtualizing the desktop, we can back it up, we can secure it, and we can provide that data to the user wherever they are," he adds.

The District of Columbia's Kundra came on board in March 2007 with the goal of establishing a DC.gov cloud that would blend services provided by his own data center with such external cloud platforms as Google Apps. The district moved aggressively to server virtualization with VMware, and made sure it had enough network bandwidth to support applications hosted on DC.gov.

The move to acting as an internal hosting provider while accessing applications outside the firewall required an increased focus on security and user credentials, Kundra says. But that was a necessary part of giving users the same kind of anytime, anywhere access to data and applications they enjoy as consumers of services in their personal lives. "The line is blurred," he says. "It used to be you would come to work and only work. The blurring started with mobile technologies, people doing work anytime, anywhere."

Kundra and Goodman have begun thinking of themselves as internal cloud providers, but many other IT shops view cloud computing as it relates to acquiring software-as-a-service and on-demand computing resources from such external providers as Salesforce.

"Cloud computing is definitely the hot buzz-

word," says Thomas Catalini, a member of the Society for Information Management and vice president of technology at insurance brokerage William Gallagher Associates in Boston. "To me it means outsourcing to a hosted provider. I would not think of it in terms of cloud computing to my own company. [Outsourcing] relieves me of having to buy hardware, software and staff to support a particular solution."

Theresa Lanowitz, founder of analyst firm Voke, is a strong proponent of using external clouds to reduce management costs. Building internal clouds is too difficult for most IT shops, she says.

"That is a cumbersome task," Lanowitz says. "One of the benefits of cloud computing is that you have companies who can offer up things in a cloud. To build it on your own is an ambitious project. Where I see more enterprises going is down the path of renting clouds that have been built out by some service provider."

There is room for both internal and external cloud computing within the same enterprise, though. In Gartner's view, corporations that build their own private clouds will also access extra capacity from public providers when needed. During times of increased demand, the meta operating system will procure additional capacity from outside sources automatically, and users won't necessarily know whether they are using computing capacity from inside or outside the firewall.

While "cloud" might be an overused buzzword, Kundra views cloud computing as a necessary transition to more flexible and adaptable computing architectures.

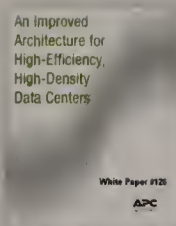
"I believe it's the future," Kundra says. "It's moving technology leaders away from just owning assets, deploying assets and maintaining assets to fundamentally changing the way services are delivered." ■

More on cloud computing

● Sun taking another shot at the cloud.
Page 18

● Columnist Jim Kobielski doesn't want to burst the cloud bubble, but . . .
Page 22

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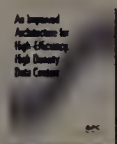
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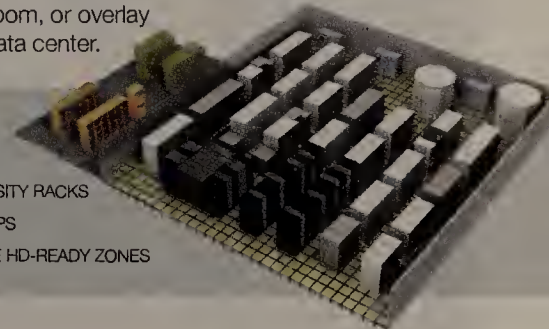


Figure 1

Efficiency and Virtualization

Your servers are efficient, but is your power and cooling?

- COOLING USAGE/CAPACITY
- SERVERS
- POWER USAGE/CAPACITY

Pre-Server Virtualization

Big gains could be made with both server and power and cooling

- ☐ Correct Server Utilization
- ☐ Correct-sized Power
- ☐ Correct-sized Cooling



Post-Server Virtualization

Grossly oversized power and cooling cancels out potential gains made by virtualizing.

- ☒ Correct Server Utilization
- ☐ Correct-sized Power
- ☐ Correct-sized Cooling

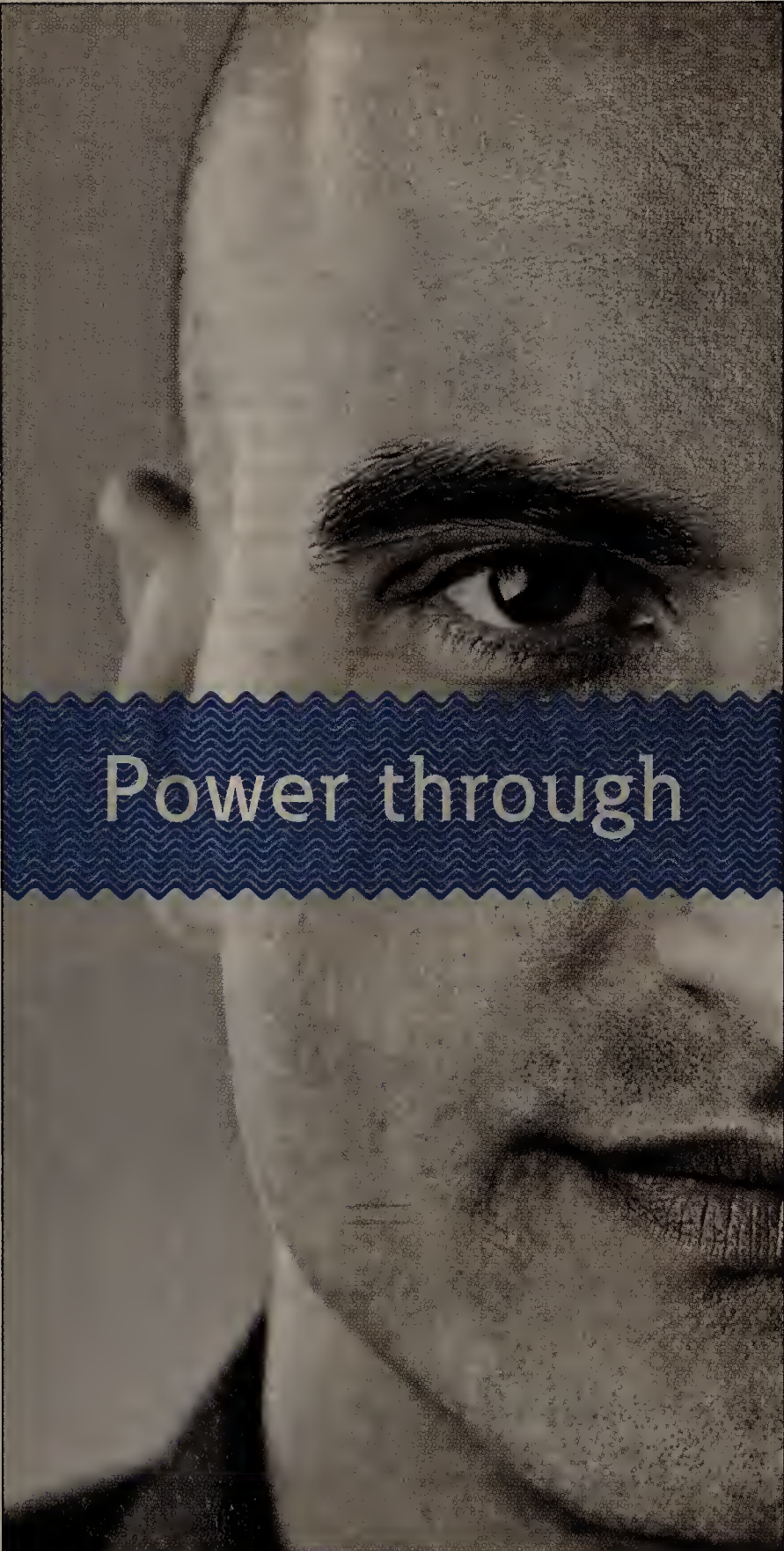


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Internet architecture: Not logical, captain!



EYE ON THE CARRIERS

Johna Till Johnson

Last week I recapped the results of some recent work I've done with my colleagues modeling Internet performance. In addition to assessing capacity and demand, we looked at what you could call "the logical Internet": the scalability of such protocol-layer features as addressing, routing, multihoming and mobility.

The news is pretty bad: Internet scalability is reaching its limits rapidly because of architectural issues inherent in the design of the 'Net. And IPv6 — since the mid-1990s touted as the fix — patently fails to fix the problem.

To see why, look closely at addressing. There are three types of names and addresses necessary for a complete architecture: application names, which are location independent and indicate what is to be accessed; network-node addresses, which are location dependent and route independent, and indicate where the accessed application is; and point-of-attachment addresses, which may or may not be location dependent but are route dependent and describe how to get there.

A major problem with Internet architecture is that it names the same thing twice: Media access control (MAC) addresses and IP addresses both name the point of attachment, but there are no defined mechanisms for creating either network-node or application addresses.

Essentially, that means Internet architecture includes just the "how," not the "where" and "what." This makes it incredibly cumbersome to implement such functions as multihoming (connecting to multiple networks simultaneously for load-balancing, greater performance or redundancy) or mobility (roaming across multiple networks). And IPv6 doesn't fix these weaknesses, it just throws a spotlight on them.

Take multihoming. In today's Internet, a URL first must resolve to an IP address, then to a well-known port. If a system has multiple interfaces (such as when it's multihomed), it has multiple aggregate-able IP addresses. The routers can't tell, however, that these different addresses go to the same place (because there's no defined mechanism for doing so). So, the system has to be assigned a non-aggregate-able address, which increases everyone's router-table size. In practice, that means that either most users can't multihomed, or routing tables must increase dramatically.

Or look at mobility. There are two ways to create mobility in today's Internet. One is for the user to stay entirely on a single provider's network, for example, a wireless provider's. That essentially makes the user into the carrier's captive. The other approach (which applies across, say, Wi-Fi and mesh networks) is to use IP mobility, in which the Internet creates a "home" router that knows when you move and creates a tunnel to the router where you are so it can forward your traffic to you. This clobbers performance: Imagine the impact on a voice call if it were being routed back and forth across the Internet.

In short, the Internet has some fundamental architectural flaws that are about to become glaringly evident, as billions more mobile and multihomed devices come online (including not just phones, but sensor networks and machine-to-machine links). As noted Internet Architect John Day says, "The Internet architecture has been fundamentally flawed from the beginning. It's a demo that was never finished."

“The Internet has some fundamental architectural flaws that are about to become glaringly evident.”

Johnson is president and senior founding partner at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

How security predictions fared in a volatile year



RISK & REWARD

Andreas Antonopoulos

At the end of 2007 I wrote a column on the future of security in 2008 in "Security: What will be hot in 2008?" Now it's time to look back at my look ahead and see how it all went. Back then I said that predicting the future depends on good data and hope that volatility from external events will be low. According to the latest data, we were just entering the recession that is now 12 months old, so there was volatility aplenty. Let's see how I did in my predictions:

● **Accelerating enterprise adoption of mobile platforms will lead to more security threats on mobile devices.**

Adoption of mobile platforms, check. More security threats, not yet. I think I missed the time-scale (I'll have to decide if this one goes into 2009 predictions or if it's too early). With the iPhone opening up to a multitude of developers and applications, and Android even more open, mobile security might become an issue.

● **Hard-drive encryption on the desktop will continue and spread to the data center.** About 50% on this one. Laptop encryption and desktop encryption are becoming more mainstream. Laptop hard-drive encryption was one of the top three security initiatives funded in the enterprise in 2008. Data center servers are not following just yet.

● **Network access control sales will continue to fall short of the hype.** Whereas NAC was everywhere at the RSA conference in 2007, by 2008 it had disappeared. The complete absence of NAC as an industry buzzword at a security trade show is news in itself. Infrastructure "forklift" NAC failed to gain much traction. Comprehensive endpoint control is still a rarity even in very homogeneous IT shops. I'll count this prediction as a success.

● **Carrier and ISP-based managed security services for small-to-mid-size businesses will multiply and spread.** 2008 saw a lot more investment by carriers in managed security services, and many of them headed down-market to appeal to smaller businesses. Our 2008 security research showed that the primary reason for buying these services shifted from cost to lack of in-house skills. SMB interest and adoption of managed security services — check.

● **In 2008, black-market profits will surpass those of the top three security pure-play companies.** This prediction is hard to verify because the bad guys don't publish quarterly results, but our economic analysis of the black market for identities indicates that this happened. Not only did identity theft, botnets and spam keep growing, but the publicly traded security companies were battered by market volatility. Count this as an unfortunate win, because the bad guys indeed are winning.

● **Virtualization-based compartmentalization of laptops and desktops for security reasons will accelerate.** From Parallels-based Windows images on Macs to the use of virtual desktops to control application deployment, security is increasingly a driver for virtualization. The latest news is Google's x86 sandbox for running code securely inside a browser. This one is a win.

So — 4.5 out of six, a 75% prediction rate in a volatile year. Better than a coin toss, and better than my stock predictions for 2008.

Antonopoulos is a senior vice president and founding partner at Nemertes Research, an independent technology research firm. He can be reached at andreas@nemertes.com.

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Powering Business Worldwide

Sun revisits cloud computing

BY JAMES NICCOLAI, IDG NEWS SERVICE

Having coined the phrase "the network is the computer" more than a decade ago Sun could expect to be leading the march towards cloud computing, but in some ways it is still at the start line.

Sun recently pulled the plug on its Grid Compute Utility service, which was launched two years ago and allowed companies to buy computing power from Sun's data centers at a fixed rate per hour, like a public utility.

The service, which predated Amazon.com's EC2 service, is now "in transition" as Sun prepares to launch some new services, according to its Web site. Sun is still supporting customers who signed up for the Grid service but stopped accepting new customers several weeks ago.

"That was an early attempt at cloud computing. We got some features right and some not right," says Dave Douglas, senior vice president



"[Grid Compute Utility Service] was kind of an early attempt at cloud computing. We got some features right and some not right."

Dave Douglas

Senior vice president for Sun's Cloud Computing division

in charge of Sun's Cloud Computing division. "We still think that model makes sense."

Sun last week discussed how it will tackle the cloud market. Thanks partly to its early embrace of the Web, Sun has a formidable list of technologies that it can bring to the cloud market. Besides its servers and storage gear it has its Solaris OS, MySQL database, xVM virtualization software and ZFS file system, to name a few. Most of the software is open source.

Sun must now package that technology and persuade service providers and enterprises to select it as their vendor of choice for the cloud.

"A lot of the enabling technology is there. It's how they are going to pull it together and take it to market that matters," says Jean Bozman, an analyst at IDC.

CEO Jonathan Schwartz formed Sun's Cloud Computing division a few months ago and it now has several hundred engineers, Douglas says. Sun also hired Lew Tucker, who helped build Salesforce.com's online AppExchange, to be the division's CTO.

Sun sees three levels of cloud computing, Douglas said. At the highest level are software-as-a-service applications such as Salesforce.com's CRM; in the middle are cloud development platforms such as the Google App Engine.

Sun hopes to play a big role at the bottom two levels, Douglas says. It wants to provide the infrastructure that service providers use to offer cloud services, but it may also offer on-demand infrastructure services of its own.

Sun could offer a hosted version of its MySQL database for developers, for example, and it could launch on-demand computing services to replace its Grid utility service.

Douglas says Sun's Solaris has several benefits, particularly in the area of management and security. A company could run Linux or Windows in virtual containers inside Solaris, and then use the Sun OS for tasks such as provisioning and security.

He also highlighted Crossbow, which is part of Sun's OpenSolaris project and can manage virtual network interface cards and funnel high volumes of traffic between servers running a variety of operating systems.

Sun acknowledged that there is much work for the industry to do in areas such as security and management. And Sun needs to flesh out its xVM virtualization management software, Bozman said.

Like other companies, Sun may find it tough selling new cloud infrastructure products at a time when many companies are cutting back on spending, says Nathan Brookwood, principal analyst at Insight64.

"They have relationships with telecommunications and service providers," he said, "so to the extent they can find any of those with money to spend, that will be good for Sun. ■"

HP gets cost-conscious with mgmt. software

BY DENISE DUBIE

HP last week announced upgraded software and alternate licensing options that it says will help enterprise IT managers reduce costs and continue to deliver services during the economic downturn.

At HP Software Universe in Vienna, Austria, HP unveiled upgraded products that the company says will help enterprise IT managers better prioritize projects and manage requirements for the business. For instance, HP integrated Quality Center 10.0 with Project and Portfolio Management (PPM), which will enable IT managers to see the number of events, incidents and defects that occur in a project to ensure business needs are met and projects are finished within deadline. Quality Center software manages and governs software quality assurance processes, automates software testing and facilitates defect management, according to HP.

"In these uncertain times, what we are seeing from customers is a need to invest smarter and wiser so they can come out of this down cycle ahead, instead of reacting and retracting with cost cutting. They want to ride this economic trend out and come out ahead ultimately," says Ramin Sayar, senior director of Business Service Management products at HP.

The enhanced integration will also make it possible for IT departments to identify low-value projects and reduce investment and labor in such projects. Added integration be-

tween Quality Center 10.0 and HP Universal Configuration Management Database (UCMDB) 8.0 can also help customers centralize and standardize processes around best-practice frameworks, such as ITIL, HP says. This new version of UCMDB is integrated with 17 products across HP's Business Technology Optimization (BTO) portfolio, including Business Availability Center 8.0, Operations Manager i-Series, Network Node Manager i-Series Advanced and Service Manager.

"With limited resources to invest in new technologies, IT managers realize now is a good time to codify best practices," Sayar says. "Integrations with the UCMDB enable customers to see business services from start to finish, reduce risk and fix network problems using proven processes."

HP not only upgraded products with integrations, the company also introduced more ways to acquire its applications. For instance, the company made its BTO software suite available via software-as-a-service licensing. And in the wake of closing its acquisition of EDS, HP introduced EDS Designed for Run and EDS Testing and Quality Assurance Services, which provides enterprises with a path for modernizing applications and optimizing systems engineering processes, respectively. These prepackaged best practices will help customers get more from their investment sooner. And HP Financial Services is offering 0% financing. ■

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NEWS ANALYSIS

The year in cybercrime

Underground botnet markets, high-profile spam cases headlined the year in tech crime

BY BRAD REED

One of the most disturbing cybercrime trends in 2008, many security analysts say, has been the emergence of a full-blown underground economy in which credit card information, identity theft information, and spam and phishing software are all available for relatively low prices.

Security software company Symantec became the latest company to raise red flags about what it called the "underground server" economy last month, when it issued a report estimating that roughly \$276 million worth of goods and information is available on online black markets. Credit card data accounted for 59% of the information available for sale on underground servers, Symantec reported, with identity theft information (16%), server accounts (10%), financial accounts (8%) and spam and phishing programs (6%) trailing far behind.

What's even more unnerving than the availability of this information is its low price. According to Symantec, bank account credentials are selling for \$10 to \$1,000, while information about financial Web sites' vulnerabilities sell for an average \$740. If all the stolen information available on the servers were exploited successfully, it would bring in about \$5 billion, Symantec estimates.

One big reason this data is more widely available is that writing malicious code has grown from a hobby for many hackers into a full-time job where code writers make a living stealing information and selling it on underground server systems, says Dave Marcus, security research and communications manager at McAfee Avert Labs.

"Malware used to be written for bragging rights," Marcus says. "It was about who could write the fastest worm or the biggest virus. Now it's about making money, what kind of data or payload you can get from a machine, and what you can do with it."

As malware has become more sophisticated, it has increased its reach throughout the Internet. According to a report issued by Google earlier this year, about 1.25% of all Internet search results in February 2008 contained at least one malicious URL, a large increase from the 0.25% of Internet search results in April 2007 that contained at least one malicious URL.

This dramatic jump in malicious search results has coincided with several security firms reporting enormous jumps in malware instances in recent years. Between 2006 and 2007, for instance, Symantec reported that it detected roughly 712,000 new malicious code threats, a 468% increase from the 125,000 threats detected the previous year. Spanish security company Panda Security, meanwhile, reported that malware increased by 800%

between 2006 and 2007, as the company detected an average of more than 3,000 types of malware per day in 2007.

The spread of malware and underground servers has produced some devastating results for some businesses so far: The U.S. Department of Justice revealed this summer that a group of hackers used a combination of wardriving, sniffer software and SQL injection attacks to steal more than 40 million credit and debit card numbers from TJX, OfficeMax, Barnes & Noble and other companies and store them on underground server systems in the United States, Latvia and Ukraine.

Spammers in the spotlight

2008 saw major developments in the cases against three major spammers in the United States. In one of the government's biggest victories in its undeclared war against spam, Robert Soloway was sentenced to 47 months in prison after he pleaded guilty to fraud, spamming and tax evasion in July.

Described by a Microsoft attorney as one of the world's 10 worst spammers at the time of his arrest, Soloway, 28, was first sued for spamming by Microsoft in 2003. Despite losing a \$7 million civil judgment to Microsoft in 2005, he continued to send out massive spam until his arrest in May 2007. In addition to being sentenced to nearly four years in jail, he will have to serve three years of probation and perform 200 hours of community service.

In a setback for federal antispam efforts, however, the Virginia Supreme Court overturned a state antispam law and the 2004 conviction of Jeremy Jaynes, who had been sentenced to nine years in jail in 2004 for sending millions of unsolicited spam e-mails every day. Because the state's antispam law does not distinguish between commercial e-mails and political or religious e-mails, the court ruled that it "prohibits the anonymous transmission of all unsolicited bulk e-mails including those containing political, religious or other speech protected by the First Amendment." Some commentators, such as *Network World* columnist Michael Osterman, questioned the court's ruling, pointing out that the right to free speech should not be translated as a right to be heard by people who don't wish to listen.

"What the Virginia Supreme Court did, in essence, is to bind the right of free speech with the obligation to listen to or otherwise actively deal with that speech," Osterman wrote. "The Court, by ruling that a spammer has a right to send noncommercial e-mails to anyone, has also ruled implicitly that receivers of those communications have an obligation to receive them or

See Cybercrime, page 21

Cybercrime

continued from page 20

otherwise deal with them actively by deleting the messages, spend money on spam filters and the like."

One spammer's saga ended in tragedy when fugitive Eddie Davidson took his own life and those of his wife and 3-year-old daughter this summer after walking away from a minimum-security federal prison camp in Colorado. He had been sentenced to spend 21 months in prison and pay \$714,139 in restitution to the IRS after he was convicted of running a massive spam operation that sent e-mail worldwide that promoted everything from perfumes to penny stocks. Davidson found that spamming on behalf of third-party companies was a lucrative career. He had earned well over \$3.5 million for his spamming activities from 2002 to 2007, court papers showed.

Despite these spammers' legal troubles, however, spam levels unsurprisingly did not see a significant drop for most of the year. The only time spam levels saw a major decline this year came when McColo Corp., a company that has been described by some as a "rogue ISP," was disconnected by its primary Internet providers. In the wake of McColo's shutdown, spam messages declined by as much as 75% — although spam is expected to climb back up to its normal levels as spammers search for alternative ways to access botnets. ■

The year in arrests and convictions

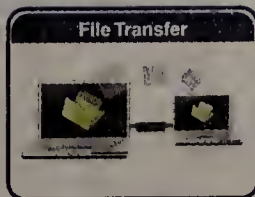
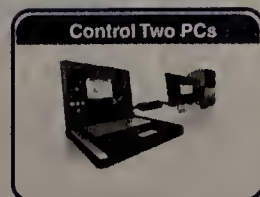
A quick look at the year's high-profile crime stories

- 1. Robert "The Spam King" Soloway:** In a boon for e-mail users everywhere, the man whom prosecutors had dubbed "The Spam King" was sentenced to 47 months in prison earlier this year after he pleaded guilty to fraud, spamming and tax evasion in July.
- 2. Randall Craig, military identity thief:** Craig, a 41-year-old Houston man who worked as a private contractor at a San Antonio Marine Reserve Corps Center, pleaded guilty in May to exceeding authorized access to a computer and aggravated identity theft after he sold the names and Social Security numbers of 17,000 military employees to an undercover FBI agent.
- 3. Terry Childs, alleged San Francisco network hijacker:** Childs, a 42-year-old employee of the San Francisco Department of Technology, was arrested in July for allegedly locking up the city's multimillion dollar computer system and refusing to tell police how to regain access to the network. Though the motives for Childs' alleged tampering are still officially unknown, city officials have said that he was rigging the network to let outside parties monitor city traffic.
- 4. Christian Sapsizian, former corrupt Alcatel exec:** The 62-year-old Sapsizian, who worked as Alcatel's deputy vice president for the Latin American region from 2000 to 2004, was convicted in September of paying out \$2.5 million in bribes to Costa Rican officials over a four-year period to help Alcatel nail down a \$149 million cellular network deal.
- 5. David Kernell, alleged Palin hacker:** Kernell, a 20-year-old Tennessee man, was indicted in October for allegedly hacking into former Republican vice presidential candidate Sarah Palin's e-mail account. He has pleaded not guilty to accessing a protected computer.

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continued from page 9

on the PHP scripting language and used MySQL as the database, with conventional database tables implementing the CDC data requirements.

But when the trio arrived in Zambia for a two-week field evaluation, a lot of the original ideas were scrapped or transformed. As soon as they saw the initial Web interface in action, staff with the Zambia National Blood Transfusion Service (NBTS) realized they could use it for more than quarterly data reports to CDC. "They realized instantly it would be good for actually managing the blood supply through real-time data collection," Vempala says.

Regional and national NBTS directors typically start fielding phone calls late in the day from hospitals and remote blood centers that are asking for blood. To make those decisions, they have relied on a purely mental picture of the available blood supplies nationwide, of demand trends and historical data, and transport availability. The Web-monitoring tool would give them current, accurate, consistent data on blood inventories. They started asking the Georgia Tech team for more data fields, and

for a flock of summary and analytical reports.

That led to a new database design to make for more flexible data analysis and reporting.

But network connections were highly problematic: some sites had none, others were dependent on low bandwidth dialup or satellite links. "One blood center had all the computing equipment but no Internet access," Osuntogun says. "Data was transferred via a flash drive handed to a visiting driver."

That "connection" took a week. There was no fiber connection in Zambia to the outside world; the data was carried on satellites.

"In some cases, the [network] roundtrip for a request was 5 seconds," Thomas says. "That could make downloading a Web page very painful."

But the team also found that computing facilities at all levels were fairly advanced. The most common browser was a version of Microsoft Internet Explorer. The Web application was redesigned with extensive use of advanced AJAX function calls. That meant the initial page could load quickly, and users could begin working while the function calls pulled down additional elements in the background.

The redesign also added the ability for each office to customize selected parts of the appli-

cation to meet local requirements for data collection and reporting. Some sites collected weekly data on blood collections but monthly data on distribution, for example. The new design also let users delegate roles and responsibilities to users in the reporting chain.

"It was an 'ah-ha' moment," Thomas recalls. "We'd been working with the CDC in Atlanta, with specific goals in mind. But the CDC weren't the people actually using the application. In Zambia, we met people who would use it day in and day out. That changed our perspective."

Osuntogun and Thomas hope to improve the application by adding forecasting capabilities that can factor in a range of variables, including the increased difficulty and time for blood transport during the rainy season.

On Jan. 1, ministries of health in 14 African nations, from Botswana to Zambia, will start using the Web-based tracking application. Osuntogun and Thomas have met with officials of the United Nations World Health Organization, after some WHO staff saw their project presentation at the American Association of Blood Banks conference in Montreal. WHO is weighing the use of the application for worldwide reporting on blood safety. ■

Cloud computing in a bubble economy



ABOVE THE CLOUD

James Kobielus

Cloud computing is the IT world's latest hot topic, and it's no secret why. In tough times, when capital expenditure budgets are under severe pressure, any pay-per-use solution looks like a winner.

If you give enterprises a credible outsourced alternative to their internal platforms and applications — one that requires no capital outlays, long-term contracts, data-center infrastructure or internal IT staff — users can scale that service up or down as their needs and fortunes expand or contract.

Clearly, cloud computing — as a purely on-demand service-delivery model — is tailor-

made for a bubble economy. In a bubble economy, volatility rules, prices fluctuate wildly, and acute uncertainty and risk permeate everything. Even more distressing, this dynamic new order can destroy established industries, vendors, business models and investment portfolios with sudden, sickening speed.

As we've seen in the financial and automotive industries, valuations can collapse overnight, thereby dislocating lives, careers and communities without much warning. As the economic outlook deteriorates, survival strategies and last-ditch tactics — such as shotgun mergers — quickly preempt sound business planning.

Yes, on-demand services contribute to innovation, efficiency and agility throughout the IT world. But fast-bubbling start-ups can also mortally wound established IT vendors before they know what hit them. And this same process can just as rapidly doom the disruptors themselves — whenever the next cloud of fresh bubbles emerges to suck away their oxygen.

Excessive business risk is the thunderclap inside the world of cloud computing, and it can zap IT suppliers and users with equal devastation. If you've invested in a traditional IT solution that now confronts a significantly more cost-effective cloud-based rival, you'll be hard-pressed to survive if one of your competitors has

leveraged that alternative to pare its cost structure to the bone.

And if you're counting on your established IT vendor to migrate you gracefully into its own emerging cloud-based environment, think again. Focusing on short-term financial results, its shareholders are demanding that it leverage the traditional cash cow of software license fees and maintenance revenue to the hilt. To the extent that your traditional IT supplier encourages you to adopt its new cloud-based offering, it will often be just a last-ditch effort to hold onto your business.

When looking at the cloud-computing horizon, no two IT industry observers agree on which solution vendors will ultimately prevail — How will Oracle, HP, IBM, Microsoft, Cisco, EMC, SAP, and other blue-chips weather this chaotic cloud front of tornadic start-ups?

Yes, the big guys all have their cloud initiatives, to varying degrees of maturity. But they all tremble before the possibility that such cloud-based pure-plays as Google, Amazon.com, Salesforce.com or Akamai will lure away customers with more flexible, lower-cost offerings.

Established IT vendors are trying a bit of everything to keep their core businesses from slipping away. Fundamentally, they're all approaching cloud computing as a sort of Venn-style conceptual bubble diagram, one that converges software-as-a-service, service-oriented architecture, virtualization, utility computing, outsourcing, open source, Web 2.0, social networking and pretty much every other IT trend of the past 10 years. What the incumbents hope is that some magic synthesis of these approaches will help them hang on through this turbulence and prevail into the next era.

We all know the IT industry is in the throes of a major shakeout and some familiar names may not survive much longer. We may have to endure our fair share of shotgun mergers among veteran IT providers before we see the end of today's perfect storm. Silver linings are there in today's increasingly cloud-oriented environment, but they're hard to glimpse through the layers of macroeconomic gloom.

Kobielus is a senior analyst at Forrester Research in Alexandria, Va. The opinions expressed are his own. E-mail him at jkobielus@forrester.com.

Bashing Google: for fun or for profit?



NET INSIDER

Scott Bradner

I do not know Scott Cleland, but I've seen his blog postings from time to time. I rarely read them, mostly because their titles tend to put me off, but I did read through his latest because of the title ("Google uses 21 times more bandwidth than it pays for — per first-ever research study").

It seemed — to say the least — improbable, and I wasn't all that impressed. Among his failures, this other Scott seems to think that I do not want the Internet when I buy an Internet connection.

Cleland's Web site is well titled: "The Precursor's Blog: Forward Thinking at the Nexus of Policy, Markets and Change." At least on this site, he seems to be a one-and-a-half-trick pony, however. Most of his postings concern Google or network neutrality, both of which he is quite vehemently against. I read through the posted titles in his archive, and two-thirds of the 250 or so postings that go back to March concern Google, and about one-sixth concern network neutrality.

It took me a while, but I did find some information linked off the Web site that may hint as to why Cleland focuses on the topics he does. If you click on the Disclaimer and Privacy Policy link at the bottom of the page, you are taken to the privacy statement for NETCompetition.org. Clicking on the About Us link on that page brings you to another page that states that their mission is to "create a forum to promote competitive Internet choices for consumers through an open, rigorous, and illuminating discussion and debate of 'net neutrality' legislation/regulation." The page also has a list of the members of NETCompetition.org, which include all the major telephone and cable companies. Cleland is chairman of the organization.

So, it looks like bashing Google is an occupation rather than an avocation for Cleland.

Regular readers of this column know that I have real problems with

some of what Google does — mostly concerning its insistence that it knows better than I do what is good for me and my privacy. But I doubt that any of my readers think that I'm paid based on how much I criticize any of the targets of my columns.

Now, back to the Cleland column that caught my eye. Google's stealing Internet capacity certainly would be a naughty thing to do, but the referenced research study has some basic problems.

The study report, written by Cleland, tries to figure out how much bandwidth Google uses and how much the company pays for it. The report notes that Google does not report how much bandwidth it buys or how much it pays ISPs for service, but he guesses at both based on other Google reports, and guesses at Internet traffic extrapolation from a Cisco report on types of traffic.

What the report misses is that there is another end for the Google bandwidth use. When Google crawls my Web site, the source of transferred data is my site. When I watch a YouTube video, my computer is the destination of the transferred data. Apparently Cleland does not realize that I pay for my Internet connection, because he does not factor that into the money being spent on "Google bandwidth."

I pay for a connection to the Internet, and in doing so, I pay for the ability to connect to and transfer data to and from such services as Google. So does everyone who buys an Internet connection, including Cleland. If one were to account honestly for payments relating to the Google bandwidth, one would have to include the percentage of my — and his — Internet bill that goes to communicating with Google. It takes two to tango and, in this case, two pay the piper.

Disclaimer: Harvard has several student dance companies, and I expect that two can tango in at least some of them; but neither they nor the university has expressed an opinion on Cleland's dancing skills. So, the above is mine.

Bradner is Harvard University's technology security officer. He can be reached at sob@sobco.com.



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Document capture, routing benefits

With companies looking to increase efficiencies, reduce costs and become greener, are paper documents finally heading to their long-predicted obsolescence? No, but document-capture and routing technologies can provide many of the desired benefits.

Contrary to some projections, paper documents are not going away. Rather, a new generation of technologies — centering on document capture and routing — is steadily emerging to enable organizations to reduce their use of paper while increasing productivity, accelerating business processes, improving compliance with regulatory requirements, and strengthening disaster-recovery and green business initiatives.

Document capture and routing is an efficient, flexible way to capture, transform and move paper and electronic documents among people, places and formats. It starts with the ubiquitous networked multifunction peripheral (MFP) — the new breed of copy machine — and provides an “any-to-many” way to scan and distribute electronic versions of paper documents to multiple destinations in multiple formats.

At the simplest level, a knowledge worker takes a signed contract to an MFP and scans it to create a digital version. A document-handling application then converts the scan into a Microsoft Word document or text-searchable Adobe PDF file, and e-mails it to the worker's preferred destination (for example, a network folder, e-mail in-box or fax number).

The power of document capture and routing becomes more apparent when a team of people are working on a client or project. All content related to their work can be captured by the MFP, collected and consolidated into a single, central and secure document-management system that enables distributed teams to share information and collaborate.

That makes it unnecessary to make multiple copies (with the associated security risks), reduces courier and shipping costs, cuts the use of printer consumables such as ink and toner, and increases information accessibility throughout the organization. For enterprises considering document capture or scanning, the MFP is the core capture device, because the new copier-class and printer-class MFPs have the right mix of feature-rich sophistication, usability and cost-effectiveness to support broad deployment.

But MFPs must be supported by a software-based infrastructure to enable post-capture document-processing. This software centrally controls and manages the document conversion, compression, routing, auditing and more. This layer acts as a “many-to-many” hub, supporting *n* devices and *n* destinations.

Destinations are the recipients of a document, whether that is a network printer or folder, e-mail, fax or a more sophisticated enterprise content-management (ECM) system or document-management system (DMS).

Every user in the company should be able to select simple scan settings, convert file formats or perform optical character-recognition and route the scanned output to their own e-mail address or a fax number. Those user instructions — sometimes called “routing rules” — can be defined, saved and executed using a routing sheet (like a fax cover sheet) or directly entered on a display panel at the MFP.

Other users, departments and groups may require advanced functions, more sophisticated features and specific workflows. These include integration with enterprise information systems (including ERP, ECM or specific vertical applications); archiving; audit logging; support for e-forms and bar codes; and electronic signatures. This is all available through today's enterprise-class MFPs and document capture and handling software.

Efficiently and effectively handling massive volumes of documents reliably and consistently across disparate geographies and distributed groups of virtual users mandates a set of key requirements:

- **Manageability** — The architecture must support centralized management while enabling decentralized document capture. From an administrative perspective, the right solution should take full advantage of Microsoft management tools such as Windows event logs, performance monitors and Windows consoles. This enables an organization to configure unattended, low-maintenance operations and receive exception notifications and alerts.

- **Reliability** — There's no tolerance for an application failure that could leave thousands of employees unable to print, fax or scan documents. There should be built-in failover so if the primary system fails, a secondary resource takes over. A SQL-based message queue working with a reliable database-management system should store the state of jobs in SQL tables. That way, if problem occurs, it can quickly roll back to the last known state and restart the process.

- **Scalability** — Being able to scale and find synergies with other paper-based-capture needs is important. As companies see the value of document capture, their volumes can double. Component-based solutions can plug in

new components to meet escalating demand.

- **Security** — From a technical and user perspective, an audit trail lets the organization track who did what, when, where and with what documents.

- **Flexibility** — Organizations change frequently. For example, document-capture solutions must be flexible enough to work with Microsoft Exchange today and IBM Lotus Notes tomorrow. Selecting a document-capture solution that works with virtually all systems — in tightly integrated environments or open architectures — will reduce overall costs.

- **Cost effectiveness** — Solutions that centralize and streamline document-capture processes can yield significant savings, especially when the product provides a total package. For example, submitting documents to a DMS in an indexable format allows faster searches and quicker document retrieval and saves time, which increases staff efficiency. Adding a network fax function can eliminate significant phone-line, maintenance, and paper and toner costs. Turning a paper document into a compressed, searchable PDF that can be e-mailed (vs. sent in expedited delivery) also can save organizations considerably.

- **Control** — By requiring authentication at the MFP, companies can role-restrict access to features and personalize the user experience. For instance, Joe can use color-copying or color-printing features and send long-distance faxes, but Bob can't. This also permits charge-back cost-recovery. A company might permit certain users to scan to their own e-mail address. Others might be allowed to scan into SharePoint or Documentum or scan to multiple distributions and destinations.

For enterprises that embrace document capture and routing, the payoffs are considerable. First, business processes are faster and less expensive because worker productivity increases. Documents and their information are accessible around the office and worldwide. Compliance with security and privacy frameworks is enhanced, and it's easier to reduce the amount of paper, toner, ink and floor space consumed when documents are moved to electronic systems. By embracing green motives, businesses achieve a solid ROI and greater efficiency.

Bouchard is chief technology officer of Omtool.

This vendor-written tech primer has been edited by Network World to eliminate product promotion, but readers should note it will likely favor the submitter's approach.

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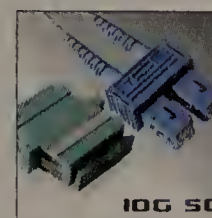
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GEARHEAD

Mark Gibbs

Migrating MapPoint Pushpins

Last week I started to discuss extracting pushpin data from Microsoft MapPoint 2004. Pushpins in MapPoint are markers you can place anywhere on a MapPoint map. There are several hundred visual styles to choose from and they can name a location or you can add more text, URLs, and links to local or remote files.

Pushpins are created through the MapPoint interface, or can be imported from Excel or comma-separated-value files. They also can be assigned to categories, what MapPoint calls "sets."

Here's where we meet our first problem. Moving pushpins among sets can be done only by editing the properties for each one individually. This makes for a very tedious job when you have many pushpins to change; and when you export pushpins to Excel, they'll be listed on multiple spreadsheets if you don't consolidate them all — a different sheet for each set of pushpins created in a different session.

There's a bigger problem with exporting to Excel, however: The exported data doesn't include the latitude and longitude of each pin. This is ridiculous. You have to wonder how the engineers could be so naive as to not allow the export of the most important data of all.

The reason I found myself needing to extract my MapPoint pushpins' is I want to export them to Google Maps. Once they're moved, I will be able not only to view them from anywhere I can get access to a computer, but also to publish them for other people to use.

Anyway, I just found a tool that will export MapPoint pushpins with their names and their latitude and longitude: It's called Pushpin Tools, and is available for a very reasonable \$75.

Pushpin Tools has some neat features that help manage the MapPoint environment, such as the ability to open or close all pushpin-label bal-

loons or set them all to display only a pushpin's name field. What really matters, however, is Pushpin Tool's ability to export.

You can export any specific, single set of pushpins or select all pushpins ("all pushpins" is another concept that Microsoft engineers appear to have not understood); with a click of your mouse, voilà! All your pushpin data will be in Excel awaiting manipulation.

But if you wish to migrate your pushpins to Google Maps, you'll need to do a little work to convert your Excel data to Google's KML format.

Converting to KML is actually pretty easy, because your Pushpin Tools data consists of a line for each pushpin with separate fields for pushpin name, latitude and longitude.

KML defines entities called "placemarks" (essentially the same concept as pushpins) that need to be in the following format:

```
<?xml version="1.0" encoding="UTF-8"?>
<kml xmlns="http://www.opengis.net/kml/2.2">
  <Placemark>
    <name>Placemark_name_text</name>
    <description>Description_text</description>
    <Point>
      <coordinates>longitude,latitude,altitude</coordinates>
    </Point>
  </Placemark>
</kml>
```

The code above is almost the simplest form of a KML file — the only simpler form would leave out the description tags.

Modifying your Pushpin Tools-generated spreadsheet to create KML content is straightforward, and Google has a good online tutorial.

Send your coordinates to gearhead@gibbs.com.



Keith Shaw

COOLTOOLS

Expand your DVR; clean up your PC

The scoop: My DVR Expander, by Western Digital, about \$150.

What it is: A 500GB external hard drive that connects to TiVo and Scientific Atlanta-based digital video recorders to provide additional storage space for the media content recorded on the DVRs. The device is powered by

an AC power adapter and connects via eSATA cable to the active eSATA port on the DVR.

Why it's cool: Connecting this device helps eliminate one of the biggest problems with set-top DVRs like the TiVo — the regular process of picking and choosing which programs you need to delete to save space for future shows you'd like to record. With the higher capacities needed to save recorded high-definition content, having a device like the My DVR Expander makes even more sense.

The device was easy to connect — I just powered it up and connected via the provided eSATA cable. After a false start (see below), I was able to get the DVR to recognize the device and add its 500GB to the built-in storage on the DVR. Before connecting the device, my DVR was 67% full, with 59 recordings. After connecting, I was 15% full, with the same number of recordings.

Some caveats: I tested this with my Scientific Atlanta Explorer 8300 HD system, not a TiVo, so your experiences may differ. On the Scientific Atlanta box, unplugging the DVR, then rebooting the system makes it go through a slow refresh period. On my first connection attempt, I was asked to reformat the external device; after I agreed, the capacity on my DVR remained the same. A second attempt at disconnecting and recon-

necting got the device to work correctly.

Grade: ★★★★★ (out of five).



My DVR Expander provides additional storage to TiVo.

The scoop: System Mechanic (Version 8.5), by iolo Technologies, about \$35 (covers one year of service updates).

What it is: This software gives you utilities to help boost your computer's speed, diagnose and fix problems, and clean up the clutter that can build up after lots of use. The software provides a quick analysis of system problems, lets you dig deeper into them and provides individual tools to help clean up your system.

Why it's cool: In my role as Cool Tools columnist, I'm constantly installing and uninstalling programs, and that tends to drag down my computer. Most programs seem to do a good job when they get uninstalled, but sometimes they don't, and you're left with unneeded junk. After the System Mechanic was installed on my system, a quick two-minute analysis came up with eight problems that read like the "12 Days of Christmas" song. I had 21 repairable security vulnerabilities, 402 Registry problems, 4.54GB of system clutter, five unnecessary start-up items and a registry that wasn't backed up. Luckily, cleaning up the system didn't take long, and within 45 minutes of my first analysis, I had a cleaner system. The system also includes iolo's ActiveCare software, which runs in the background to keep the PC optimized.

Some caveats: Some quirky things on my PC still existed after I ran System Mechanic, and the system said Windows Firewall wasn't enabled but couldn't recognize my other firewall and antivirus programs.

Grade: ★★★★★

Shaw can be reached at kshaw@nww.com.

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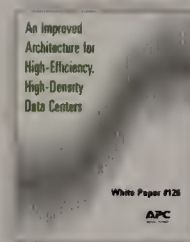
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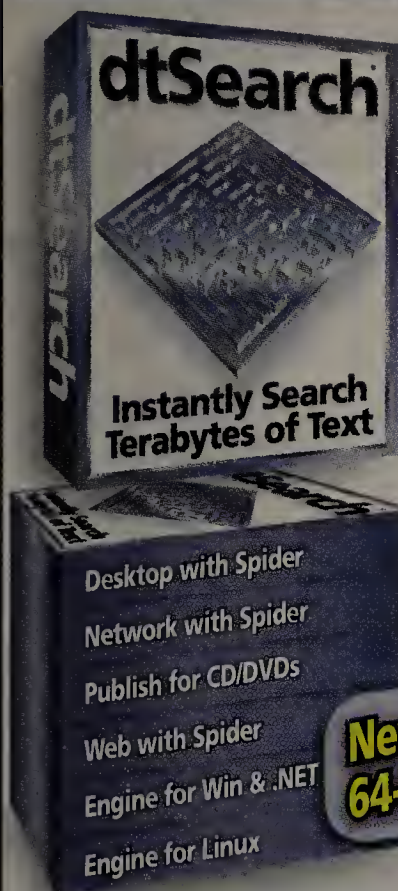
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guide

to AUTHENTICATION

► **Where are they now?**
How six start-ups fared in the
two-factor authentication market
Page 34

► **SLIDE SHOW: The many
faces of multifactor
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NETWORK WORLD SPECIAL FEATURE

Token resistance

Complex biometrics and hardware tokens fail to win widespread acceptance; less obtrusive, behind-the-scenes authentication methods gain traction

BY JEFF VANCE

The need for strong authentication to protect online transactions and comply with new regulations spawned a host of start-ups over the past couple of years that offer exotic types of two-factor authentication.

Last year, we profiled several of those companies (see www.nwdocfinder.com/7921), which used such techniques as fingerprint scanners, facial recognition, biometric authentication based on typing patterns, and “cognitive biometrics,” which relies on a person’s memories of unique events in life.

Those complex authentication methods failed to gain broad adoption, however, and many of those companies are no longer around. Hardware-based tokens, which have been around forever, have failed to win many converts. And plain old user name and password, once thought to be an endangered species, is very much alive.

So, what happened?

Apparently, banks and other online companies decided that upsetting customers with convoluted authentication methods was a price they weren’t willing to pay. So, from a customer perspective, very little has changed.

“If they experience anything besides passwords — and many don’t — consumers typically encounter knowledge-based authentication,” says Mark Diodati, senior analyst of identity and privacy strategies for the Burton Group. Examples of this kind of authentication would be asking a consumer the name of his favorite pet or the name of the high school she attended.

Authentication goes undercover

Online companies nevertheless are doing more to make sure people are who they say they are — they’re just doing it behind the scenes. The most common tool is device recognition, usually a combination of a cookie or Flash object and other device specifics, such as IP address, time-

See Authentication, page 30



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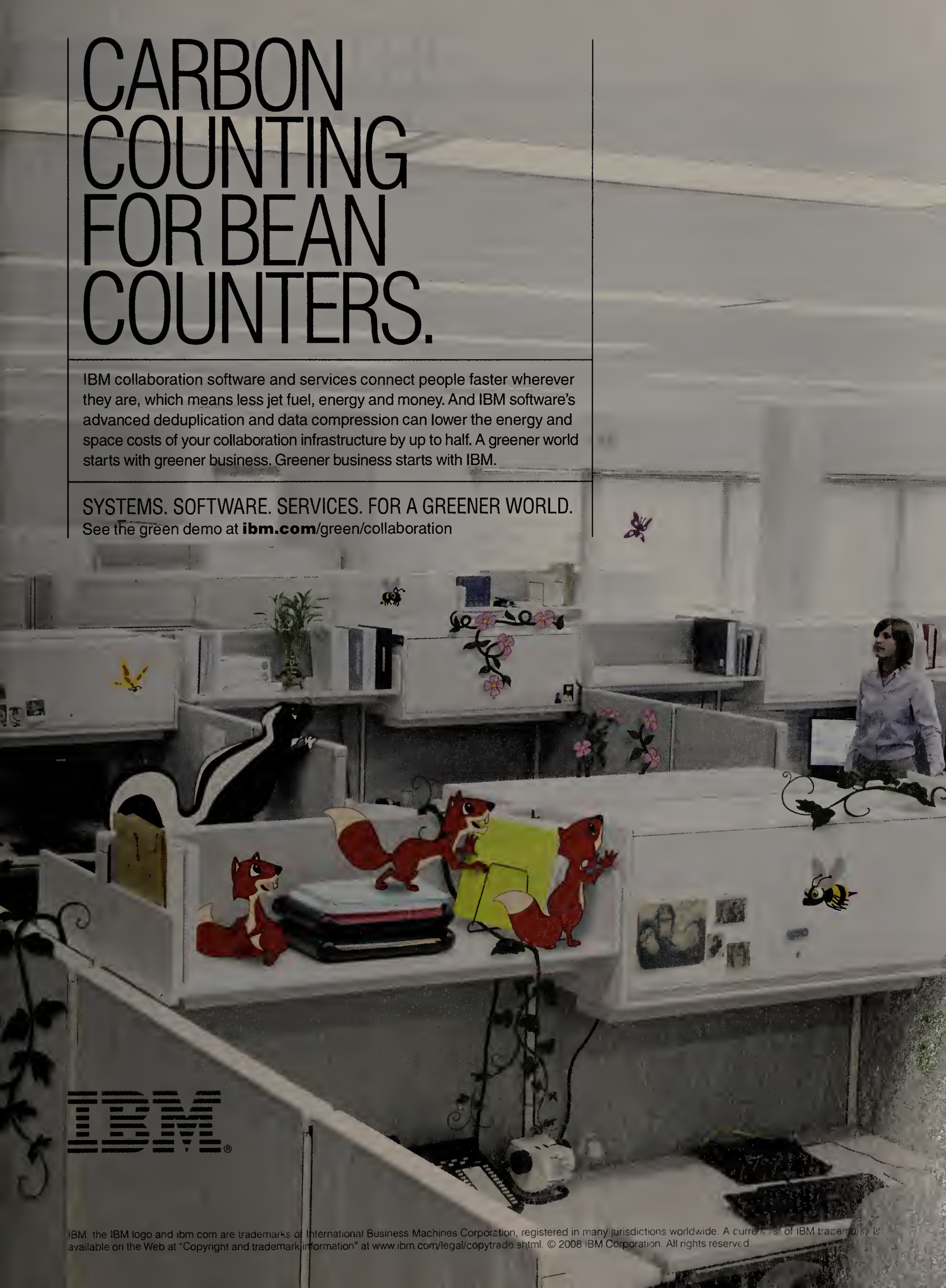
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Authentication

continued from page 28

zone setting, and operating system and browser. In theory, these provide a second factor in the something-you-know, something-you-have, something-you-are authentication matrix. Your computer's settings are something you have, while the challenge questions cover something you know.

Other types of behind-the-scenes protection, while not technically authentication factors, include geolocation and transaction monitoring. Geolocation restricts online activities to locations where customers typically conduct business. Combined with proxy detection, geolocation is a strong form of fraud protection — that bank transfer to (or from) Kenya or Uzbekistan will be tagged as very high-risk and may be blocked.

Transaction monitoring, at its most basic, targets activities that are known to be typical of fraud. More sophisticated systems, such as those from Arcot Systems, Entrust, RSA, and VeriSign, develop profiles over time for individual users' behavior.

"The classic manifestation of risk analytics is passive from the consumer's perspective," Diodati says. "What gets flagged are anomalies."

Most people have established banking patterns. They log on from specific devices and locations. They make withdrawals within a certain dollar range. They pay the same bills every month. They take out large chunks of money a couple of times a year for vacations. Their behavior is predictable. If they break their normal patterns, however, they will be asked to further authenticate themselves.

Bank of America's SafePass

This is exactly what Bank of America (BoFA) is doing with SafePass, an optional multifactor authentication program. Customers who sign up for SafePass get a one-time passcode (OTP) sent as a text message to their mobile phone.

BoFA is a top online-banking site, with 22 million subscribers and 11.6 million people paying bills online. Its SiteKey system is the de facto industry standard for front-door online-banking authentication. The system combines standard user names and passwords with an image that is seen at logon to prevent phishing, plus challenge questions and device authentication.

Why use mobile phones as an additional authentication factor? "Our retail customers are resistant to being forced to keep track of yet another thing," says Jamie Ashfield, the bank's senior vice president of



Bank of America's SafePass system uses multiple levels of authentication. For activities with the highest risk, such as transferring large amounts of money, one-time passwords are required.

e-commerce security strategy and development. "The big message we got over and over again was to put any additional security layers into something people already have."

The mobile phone was an obvious choice, and most security experts consider out-of-band authentication as a strong additional factor. In September, BoFA began offering a second OTP option, a credit-card-sized OTP generator. For now, the OTP card is "yet another thing," but expect to see these integrated with automated teller machines and credit cards soon. (The bank declined to name the vendors it uses for its security solutions.)

Today, SafePass is optional, but higher-risk activities are being used to drive adoption. Logging on from a new device, adding new payees or transferring large sums of money can't be executed immediately without an OTP. "SafePass interacts with SiteKey. Instead of using two-factor for every sign-in, we've learned that most transactions are low risk, so we tie stronger authentication to high-risk activities," Ashfield says.

David Shroyer, senior vice president, product manager, Online Security & Enrollment at BoFA, argues that two-factor authentication is a small piece of the security puzzle. It's effective against some types of fraud but not others. "Nothing is bulletproof, but the foundation of our approach is the ability to learn. Something might slip through today, but it won't happen again because we've seen it before," he says. "The real beauty of this approach is applying what you learned from transactional and operational risk-detection strategies back to the front door."

Two-factor lags outside of the banking industry

The financial sector is by far the most aggressive industry segment when it comes to adopting two-factor authentication. Federal Financial Institutions Examination Council regulations have accelerated adoption, as have the relatively large risks that financial institutions face.

In the rest of the world, it's a much different story, however. Aside from online banking, instances where end users encounter two-factor authentication are few and far between, and the pace of adoption is very slow in enterprises in general (beyond the financial sector).

There is one other sector where two-factor authentication is alive and well: the federal government. "One of the recommendations that came out of the 9/11 Commission was for federal agencies to strengthen the identity credentialing process and eliminate weak credentials for sensitive systems," says Randy Vanderhoof, executive director of the Smart Card Alliance.

The Federal Information Processing Standards Publication 201 standard "specifies the architecture and technical requirements for a common identification standard." This federal standard is commonly referred to as the Personal Identity Verification (PIV) standard.

The deadline for agencies to comply with the PIV standard was Oct. 27, 2008. "The results of the Office of Management and Budget audit haven't been released, so I don't know how successful agencies were at meeting the deadline," Vanderhoof says. "What has been reported is that 1.2 million smart cards have been issued as of September, out of about 2 million federal employees."

Of course, the definition of a "smart card" is very broad. It could be a card, or it could be a secure e-credential on a USB token or a chip embedded into an ID badge. In fact, the ID badge could end up being the go-to form factor for strong authentication in the government, because it represents an easy way to combine

See Authentication, page 32

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Authentication

continued from page 30

credentials for physical access to buildings and other secure areas with credentials for logical access to electronic systems.

In the enterprise, there's the power of leverage

The business sector's path to adoption has been much slower. Yes, there is an alphabet soup of regulations out there, but few address authentication directly.

Businesses, however, have a key advantage over consumer-facing applications: leverage. "It's not a big deal if your employer asks you to carry an authentication device, be it a USB token or a badge," Burton Group's Diodati says. The difference is ownership. Consumers may balk at having to carry tokens to get at their money, or having to install yet more software on their computers. In the enterprise, however, the building, the computers and often even the mobile devices are owned by the company. The enterprise sets the policies.

The trouble is that those policies are all over the map, as are the various types of authentication being deployed.

Large CPA firm deploys USB tokens

Virchow Krause & Company is the 15th-largest certified public accounting and consulting firm in the United States. With more than 1,300 associates and offices in Michigan, Illinois, Minnesota and Wisconsin, it investigated the most cost-effective way to improve security, and concluded that doing away with passwords would deliver the most value.

"Our associates are highly mobile, and we're in an industry that must comply with numerous regulations," says Matt Jennings, who's the senior manager for Virchow Krause's IT group. "We needed a two-factor solution that would have as small a footprint as possible."

Virchow Krause adopted Gemalto's .Net dual USB tokens. They provide two authentication options, an OTP generator (and display), and built-in smart card technology to store public-key infrastructure certificates. These eliminate passwords, but users still must remember a PIN to access the device. Gemalto's tokens also integrate with Microsoft's Windows Vista and XP without any middleware requirements.

Associates now have a secure way to remotely access company applications on the road, at public terminals or behind client firewalls. The cost — about \$150 per user — is competitive with the cost of passwords alone, which require a lot of help desk support for resets. "The cost is a tiny sliver of our overall security and user-support costs," Jennings says.

Yet another regulation in the mix

Arise Virtual Solutions provides virtual call-center services to clients in such industries as retail, transportation and computer technology. Arise's 8,000 call center representatives work from remote or home locations, and because many operators collect such personal information as credit card data over the telephone, Arise must achieve Payment Card Industry (PCI) compliance. The PCI Data Security Standard applies to retail merchants

and online service providers transmitting consumer credit card information.

With such a large, dispersed workforce, Arise needed something that would be easy for IT to manage and convenient for workers to use. Based on these criteria, it deployed RSA's SecureID, which can be delivered via USB tokens, software interface or browser toolbar.

"We're trying to move as many agents as possible to software-based authenticators," says James Walkers, the CTO of Arise. "Software is more cost-effective and it solves a lot of administrative problems, while delivering security on par with hardware-based solutions."

Crawling towards standards

Because the definition and deployment of strong authentication is so varied, a number of organizations are advocating standards. These include the Organization for the Advancement of Structured Information Standards, the OpenID Foundation, the Smart Card Alliance and the Liberty Alliance.

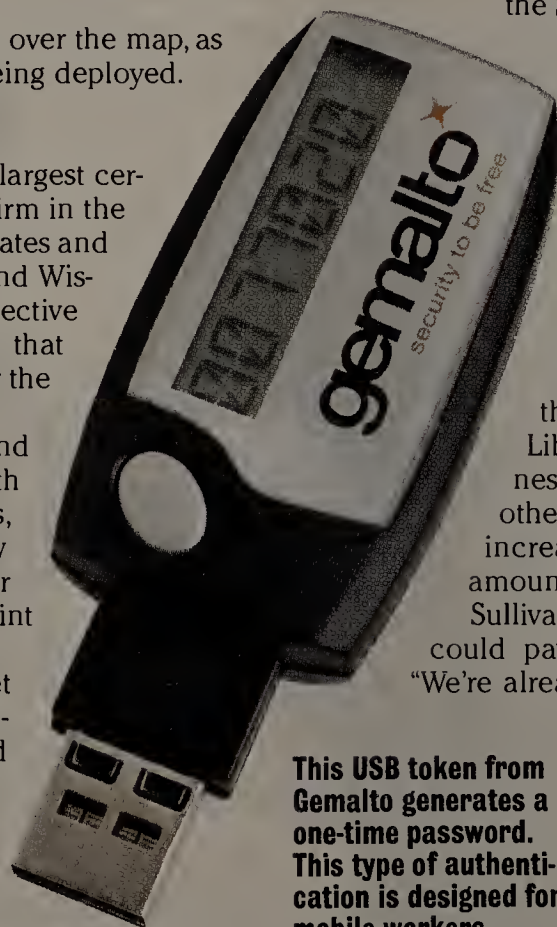
To help make sense of the many authentication options on the market, the Liberty Alliance has developed the Identity Assurance Framework, which rates the level of certainty that the people presenting themselves in electronic transactions are who they say they are. The certainty varies from one (low) for something such as passwords to four (high) for something such as biometrics or an out-of-band second factor of authentication.

"There's more than just technology involved in the ratings," says Roger Sullivan, president of the Liberty Alliance. "You must also consider the business relationship. Business partners must audit each other to see if they're trustworthy, and you need increasingly higher levels of trust as the dollar amounts in transactions get higher."

Sullivan also believes that the current economic crisis could pave the way for stricter identity requirements. "We're already hearing the drumbeat for increased regulations as a backlash to the Wall Street bailout. If regulations start restricting access to various types of information based on roles, identity will have to be addressed. You can't create role-based restrictions without identity management at the core, and industrywide identity management can only be accomplished through a standards-based approach," he says.

Will standards lead to some kind of Holy Grail of authentication, a simple, unified form of strong authentication? "There's a vision of that," the Smart Card Alliance's Vanderhoof says. "Microsoft has made plenty of announcements around CardSpace, and there is a lot of investment at the operating system and server level." (Microsoft advocates its own uber-plan, CardSpace, and such competitors as Google and IBM advocate a different approach, an open source identity-management platform called the Higgins Project.) "What will probably happen is that smart cards will become transportable, possibly able to move from one form of ID to another. I'd say that's more likely than a single super ID," he says.

Vance is a freelance writer. He can be reached at jeff@sandstormmedia.net.



This USB token from Gemalto generates a one-time password. This type of authentication is designed for mobile workers.

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Where are they now?

How six start-ups fared in the two-factor authentication market

BY JEFF VANCE

We focused on six start-ups in our May 2007 story. Only two are still operating with the same name and the same product line.

Pay By Touch (see www.nwdocfinder.com/7921) has gone bankrupt. Its kiosks, which let consumers make purchases with a finger-print scan, were deployed in more than 3,000 retail locations, mostly in Europe and Asia but also at some Albertsons, Jewel-Osco and Lowes Foods stores in the United States. Founder John P. Rogers is facing a number of investor lawsuits, and the company's assets were purchased by CardWorks Processing in April.

Cogneto, which offered cognitive or memory-based authentication, has gone through a lot of turmoil. It split into two companies, one in Canada, one in London. The Canadian version has filed for bankruptcy, while the London Cogneto is a one-person operation that "doesn't have any customers" and has "burned through about \$5 million," according to David Eppert, who originally developed the product's intellectual property and sold it to Cogneto.

Now, Eppert has reacquired the intellectual property and patents and formed Think Security. "The big problem with authentication is that everyone uses sensitive information to authenticate. Even biometric databases can be hacked. We're working on a way to authenticate without using sensitive data," he says. He declined to disclose further details of how this works and how Think Security databases repel hackers.

Two start-ups, Passfaces and Porticus Technology, exist pretty much as they did in May 2007. Passfaces relies on the fact that the human brain is wired to recognize faces. Passfaces presents a grid of faces, from which you pick the one you recognize. After clicking through a few grids, your pattern of recognition can be counted on to identify you uniquely as a biometric factor. The company just signed up a Wisconsin credit union, which declined to be named. "This credit union proves that our solution scales," says CEO Paul Barret. "It only took a couple of months to roll it out to all of their customers, and it dramatically reduced their support costs."

Porticus hasn't disclosed any customers, but it recently signed a partnership with BBN Technologies, the result of which will be a voice-recognition transcription service. According to CEO Germano Di Mambro, the company is raising a new round of funding and has several customer deals nearly closed, including one with a major smartphone provider. Porticus also recently appointed a new CTO, Jerry Ruggieri, formerly with Fidelity Investments.

BioPassword is now doing business as AdmitOne Security. The company's core technology identifies individuals by their unique keyboard typing patterns. AdmitOne, however, has broadened its technology recently. "Keystroke recognition is just a factor, not a complete solution, and customers want complete identity assurance solutions," says Matthew Shanahan, senior vice president of marketing and strategy. AdmitOne's portfolio now includes risk-based authentication and revenue recovery. Customers include Bank of Sacramento and Parsons, Behle & Latimer.

Finally, Encenutate, which authenticated users via RFID tags that could be attached to ID badges or mobile phones, was acquired by IBM in March. Financial terms were not disclosed.

The science behind Passfaces



1. Passfaces takes advantage of the human brain's innate ability to recognize faces.



2. In the Passface enrollment process, users practice picking out a preselected "Passface" from a group of nine faces.



3. When authenticating for real, users identify the Passface from a grid that includes eight decoy faces. They don't need to memorize a password or PIN.



4. The 3-by-3 grid makes it easy to use Passfaces on other devices, such as cell phones.

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Cisco

continued from page 1

example of that pronouncement will be a new Cisco blade-server system expected next year. This will take the company into the data-center compute space, right up against longtime stalwarts — and until now, Cisco partners — IBM and HP.

Cisco officials interviewed at last week's C-Scape conference would neither confirm nor deny that this system is in development — its code name is "California Server," according to sources — but its impact will be substantial in the market and on its current relationships with compute partners.

"I've seen the product," said Vikram Mehta, CEO of Blade Network Technologies, a supplier of blade server switches to IBM, HP, Dell and others. "I think I know what Cisco's trying to do. Servers are a \$60 billion market. And if you're the size of Cisco — \$40 billion — you're looking for the next multibillion dollar market to jump into. There aren't a lot of adjacent markets, so they decided to step on their partnerships and take these guys head-on to get a slice of the server action."

Blade Network, a private company that just announced a record fourth fiscal-quarter in terms of growth in its Ethernet port shipments, believes Cisco's entry into the market will only strengthen the ties Blade has with IBM and HP, Mehta said.

There's not much difference between "California" and existing blade servers for data centers, but there will be a Cisco-specific twist on it to justify its cost and profit margins, Mehta said. It is an internally developed system based on Intel x86 processors and a Linux operating system, and it embeds Cisco's recently introduced Nexus 5000 data-center switches, other sources say.

In addition, California is expected to support Cisco's unified fabric, which supports multiple types of data-center traffic over a single Ethernet host bus adapter, data-center automation tools and deep integration with VMware Infrastructure.

Cisco, meanwhile, believes there are areas within the data center beyond networking where it can iron out "seams" of technology among servers, switches and storage devices, said John McCool, senior vice president and general manager of Cisco's Data Center Switching and Services group.

"I can't comment on an unannounced product," McCool said about California. "I would say though, that you see what we've done with the [Nexus] 1000V — the interesting things now are happening at the seams of technology. Obviously, we represent the networking component. But you have a virtualization layer that's now emerged in data centers, and you have compute. We're very much interested in making the whole environment — we call it unified computing — a homogeneous environment by making those seams not look like

gaps in IT," he said.

Cisco's Nexus 1000V is a software switch that runs on multivendor servers. It takes a virtual machine's network and security properties with it while the virtual machine is moved around the data center.

McCool was philosophical about the potential impact Cisco's data-center expansion will have on current partners.

"We see such a shift in the technology landscape with virtualization that it's creating a new set of challenges that have to be innovated," McCool said. "I'm sure those companies are looking at their own vectors of innovation on how to address this. Change bring challenges; challenges hopefully bring innovation. We've decided to embrace the challenge and believe that we can innovate."

"I would think the nature of partnerships in general is going to change," McCool said. "The nature of large organizations, especially solving customer problems, there's going to be a little bit of overlap, a little bit of collaboration."

Analysts say the company's overall IT ambitions will be Cisco's most daunting hurdle in the coming year.

"Can they really make the credible transition to an IT vendor from a networking vendor?" asks Zeus Kerravala of The Yankee Group. "That is their absolute biggest challenge because that gets them into a whole different set of buying criteria."

The unified communications manifesto

A buying criterion Cisco's most familiar with is networking, particularly LAN switches. Cisco's Big Bang switching upgrade, hinted at last spring, will emerge in January and encompass more than just the Catalyst 6500, as initially expected.

The emphasis on Big Bang, the code name for the switching upgrade, will be green and apply to Cisco's entire switching portfolio, said Marie Hattar, vice president of network systems and security solutions at Cisco.

"It's an evolutionary capability. It's not a new platform," Hattar said. "It's really more

tied to green capabilities, and how the network really enables those types of capabilities." She would not divulge any further details on Big Bang.

Next year will also see Cisco's collaboration portfolio progress with a new release of its unified communications software that will let companies collaborate.

Cisco's Unified Communications System 7.0, which was unveiled in September, enables companies to collaborate internally. The 2009 release will enable intercompany collaboration among business partners, suppliers and customers, according to Barry O'Sullivan, senior vice president of Cisco's Voice Technology group.

"In 2009, you'll see business-to-business unified communications" from Cisco, O'Sullivan said. "We have 60,000 customers, and there's a huge opportunity to connect them all over the Internet."

The software will enable IT organizations to configure security and QoS policies for communications with companies they trust, O'Sullivan said. It will employ the Session Initiation Protocol for call setup, and allow companies to establish presence "federations" for groups of collaborative workers.

Cisco's WebEx Connect product, which also debuted last September, will be the tool by which these companies can federate, O'Sullivan said.

Cisco has prototypes to demonstrate the capabilities of the new software, but no trials yet. Target trial customers include those in the supply chain and manufacturing verticals, O'Sullivan said.

The system will let users build hybrid premises and on-demand intercompany collaboration networks, which combine the capabilities of Cisco's Unified Communications Manager IP telephony platforms and the WebEx Internet conferencing system. Video also will be a key component of the system, but may not be accessible from mobile devices because of the bandwidth limitations of wireless networks, O'Sullivan said. ■

■ **Network World**, 492 Old Connecticut Path, Framingham, MA 01701-9002, (508) 766-5301.

Periodical postage paid at Framingham, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #PM40063731. **Network World** (ISSN 0887-7661) is published weekly, except for a combo issue in November and the last week and first week in each of the following months: Dec./Jan., March/April, May/June, June/July and Aug./Sept. by Network World, Inc., 492 Old Connecticut Path, Framingham, MA 01701-9002.

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Network World can be purchased on 35mm microfilm through University Microfilm Int., Periodical Entry Dept., 300 Zeeb Road, Ann Arbor, Mich. 48106.

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■ Editorial Index

■ A		■ G	
AdmitOne Security	34	Gemalto	32
Adobe	24	Google	1, 3, 17, 18, 32, 38
Agilance	8		
Akamai Technologies	22	■ H	
Amazon.com	1, 18, 22	HP	1, 18, 22, 36
Apple	17, 38		
Arcot Systems	30	■ I	
AT&T	38	IBM	22, 24, 32, 34, 36
		Imprivata	8
■ B		Intel	8, 36
BBN Technologies	34	iolo Technologies	26
Bell Canada	7		
Blade Network Technologies	36	■ M	
Broadcom	7	McAfee	8, 20
		Micron Technology	14
■ C		Microsoft	3, 7, 8, 9, 20, 26, 32
CardWorks Processing	34	Mozilla	7
Certicom	8		
Chalk Media	8	■ N	
Cisco	1, 22	NLNet Labs	10
Citrix Systems	14	Nortel	7
Cogneto	34		
		■ O	
■ D		OpenText	24
Dell	23	Oracle	18, 22
■ E		■ P	
eEye	8	Panda Security	20
Embotics	7	Parallels	27
EMC	22, 24, 30	Passfaces	34
Entrust	30	Porticus Technology	34

■ Advertiser Index

Advertiser	Page #	URL
American Power Conversion	15	www.apc.com
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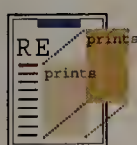
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BACKSPIN

Mark Gibbs

The G1 and Google's Evil Quotient

A couple of weeks ago in Gearhead (www.nwdocfinder.com/7938) I wrote about how impressed I was with the T-Mobile G1 cell phone — the one based on Google's Android operating system. I was so impressed I gave the G1 a rating of 5 out of 5.

Reader Burt Bossi wrote in to stick it to me: "How can you possibly rate this G1 device a '5 out of 5' immediately after you said the camera

lens is poor, there is no zoom, handset sound sucks, there is no Flash support, and it's already showing signs of mechanical breakdown on the swivel keyboard? If there were no problems would you have rated it 7 out of 5?"

I felt the G1, despite the flaws I identified, was a significant product with enormous potential in the corporate and consumer market. Moreover, it is the best competition to the iPhone I've seen and it could prevent the "superphone" market from being a one-horse race.

Now, if I could have awarded fractional ratings I might have gone for 4.8 or 4.9 rather than 5 so you might think of my rating as a "rounding up". That said, I have since discovered some problems with the G1.

First the minor stuff. Battery life is a problem the G1 and iPhone have in common. On the G1, if you enable GPS, Wi-Fi and Bluetooth, along with a few of the "chattier" Android applications that communicate with various Internet services, your power will disappear faster than a bank that has just been handed a share of the bailout pot.

The Android operating system itself appears to have a few minor problems. It occasionally gets over-enthusiastic and scrolls lists more vigorously than you want and it can be slow to respond. Also, the entire system crashed on me three times for no obvious reason, but did recover after a couple of minutes.

So that was the minor stuff. Now let's get to the big warty things. In my column I discussed how Apple had reserved a backdoor into the iPhone that would allow the company to remotely remove any application it doesn't approve of. I had researched the issue of whether there was a backdoor in the G1 and, finding nothing, assumed Google had avoided being evil.

Reader Steven Klein informed me that such a thing does exist, and the reason I hadn't found it is Google calls it a "killswitch". That said, there is a difference. Unlike Apple, Google can only remove applications that have been downloaded from the Android Marketplace.

Also, as to the openness of Android as implemented on the G1, well, there is a limitation. Up until the R30 release of Android you could get access to the shell, but the update removed that facility which annoyed a lot of tech folks.

So, here's the thing: Do these warty things constitute "evil" behavior? The fact that the phone is locked to a single provider is kind of evil, although as a first step into the market it is arguably justified (that said, teaming with T-Mobile qualifies as downright evil, in my book).

The killswitch? Again, not completely evil as it has limited scope, but then again, neither is it not evil. Removing shell access? Definitely more evil than otherwise.

So weighing up Google's Evil Quotient, when it comes to the G1 I have to judge the company around 50% evil. And the G1 itself, I have to downgrade it to 4 out of 5, which for me means it's definitely going to be goodbye T-Mobile. The G1 almost persuaded me to stay, but now it's off to AT&T and the iPhone. To quote the Hitchhiker's Guide to the Galaxy: "I wonder if it will be friendly?"

Gibbs is jumping cellular ship in Ventura, Calif. Expose your carrier to backspin@gibbs.com.



Michael Cooney

LAYER8

The ultimate artificial intelligence wizard?

The military's expert R&D arm isn't always about making bigger, better things that blow up or fly fast; sometimes it wants to develop scarier things like avant-garde artificial intelligence software. In this case, the Defense Advanced Research Projects Agency (DARPA) is looking to build something known as a Machine Reading Program that can capture knowledge from naturally occurring text and trans-

form it into the formal representations used by AI reasoning systems.

The idea is that such an intelligent learning system would unleash a wide variety of new AI applications — military and civilian — ranging from intelligent bots to personal tutors, according to DARPA.

For example, all of the text in the Web would become available for automating the monitoring and analysis of nations' technological and political activities; plans, rhetoric and activities of transnational organizations; and scientific discovery in various disciplines, DARPA states. As digitized text from library books worldwide becomes available, new avenues of cultural awareness and historical research will be enabled. With truly general techniques for effectively handling the incompatibilities between natural language and the language of formal inference, a system could, in principal, be constructed that maps between natural and formal languages in any subject domain, DARPA says.

The agency adds that nearly all successful AI systems today succeed because they possess sufficient consistent, relevant knowledge about a given problem. However, because large amounts of knowledge are almost always needed for this success, AI systems require this knowledge to be expressed in a logical formula of some type. Manually encoding such knowledge can become prohibitively expensive. Because text is, by far, the most flexible and ubiquitous medium used to capture knowledge about the diverse areas of human interest, it is

natural to consider making it feasible for AI reasoning systems to employ this vast store of human knowledge. As AI systems currently cannot use such knowledge, it would be revolutionary if technology could be developed to bridge this gap, DARPA says.

The problem is reading and understanding — the necessary information is available, but rarely in a form that can be used by current AI systems, DARPA says. For example, the military frequently faces impediments to stability and reconstruction operations in a new location due to the lack of understanding of the local situation. Similarly, strategic assessment of a foreign nation's science and technology involves the continuous assessment of technical articles, bibliographies and conference agendas. This information is often available on the Web, and some tools to assist this analysis are available, but the process would be enhanced by a system that could directly analyze such text information. The same reasoning could be equally valuable if applied to other types of open source intelligence analysis, including assessing military readiness; political speeches, actions and more obscure messages; economic trends and sentiments; and propaganda from terrorist groups and even their hidden Web-based communications.

How such software will ultimately be contracted and developed will be big issues. Some of the requirements are extensive.

DARPA has been interested in exploiting the promise of AI for years. Earlier this year it approved the second phase of AI technology that will help automate military air traffic control. The Generalized Integrated Learning Architecture system, developed by Lockheed Martin's Advanced Technology Laboratories, is intended to help the Air Force in particular keep airspace operating safely with increased air traffic and the advent of unmanned aerial vehicles.

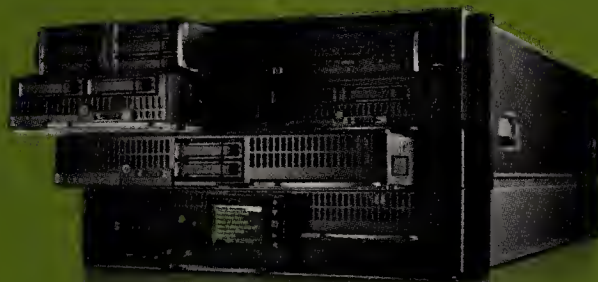
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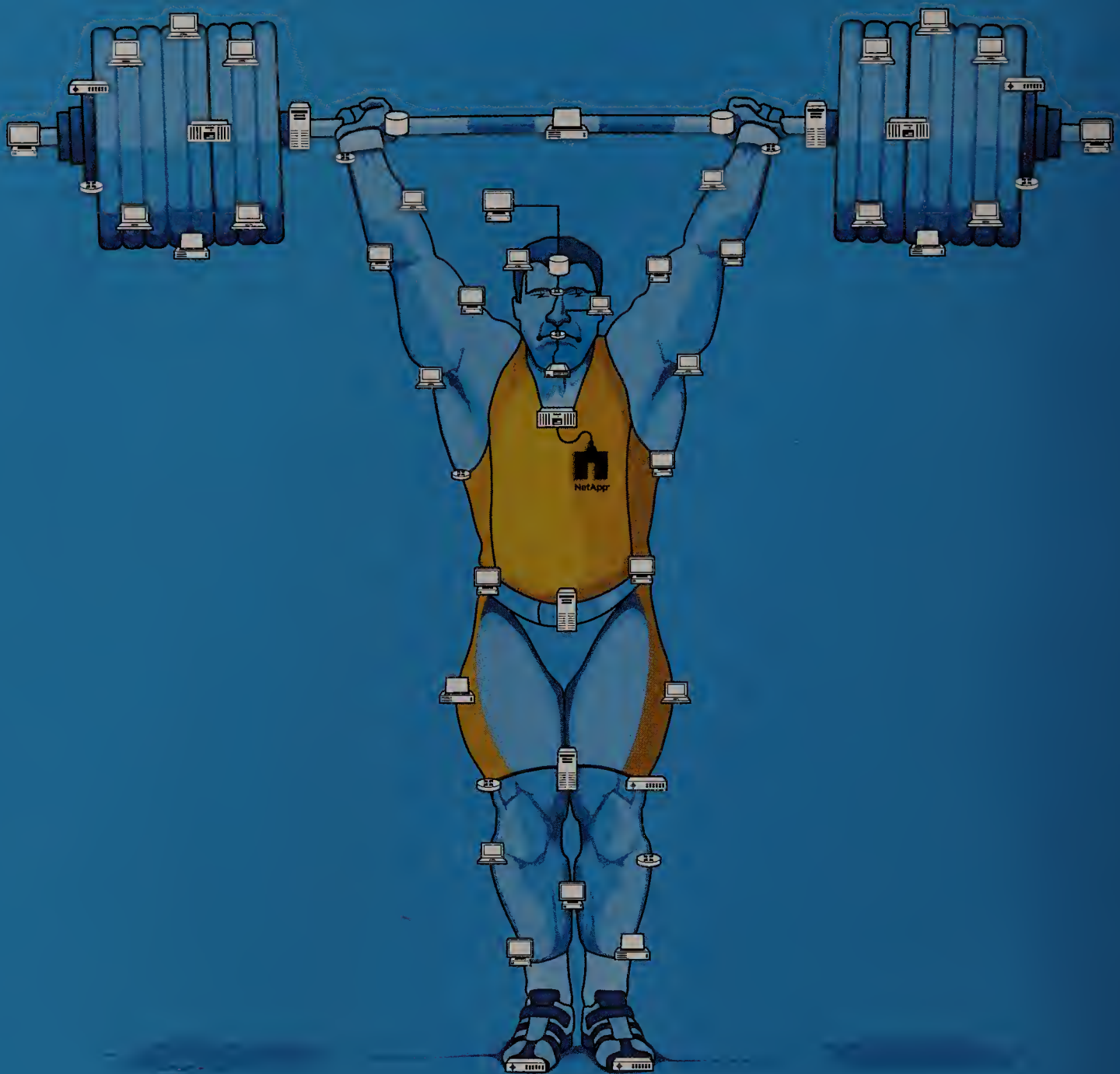
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